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CONSUMERS ASSOCIATION OF CANADA (Manitoba chapter)
Gloria DeSorcy - Executive Director
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Max Griffin-Rill

SOUTHERN CHIEFS' ORGANIZATION
James Beddome - Counsel
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Jared Whelan
Wade Sutherland
Den Valdron - Counsel

MANITOBA METIS FEDERATION
Jason Madden - Counsel
Megan Strachan
Marci Riel

MANITOBA WILDLANDS
Gaile Whelan Enns

PARTICIPANTS

SOUTHEAST STAKEHOLDERS COALITION
Kevin Toyne - Counsel
Monique Bedard
Jim Teleglow

DAKOTA PLAINS WAHPETON OYATE
Warren Mills
John Stockwell
Craig Blacksmith

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THURSDAY, MAY 18, 2017
UPON COMMENCING AT 9:30 A.M.

THE CHAIRMAN: Good morning, everyone, and welcome back to our hearings into the Manitoba-Minnesota Transmission Project. I think before we get into the questioning and answers, is there someone to be sworn in?

MS. JOHNSON: Yes. As I understand it, Mr. Shaw has come from the back row and has been promoted to the front table. So we'll have him sworn in.

Could you state your name for the record, please?

MR. SHAW: Michael Shaw.

(Michael Shaw sworn)

THE CHAIRMAN: All right. Thanks for that.

So we're now going to open up the biophysical presentation for questions, assuming there's nothing to add from Hydro to the presentation?

All right. There has been a slight change in the order, as I understand it. Normally we would have started today at the top of the

order with the Consumers Association, but they have agreed to swap positions with Manitoba Metis Federation. So we will start with MMF and Megan Strachan.

MS. STRACHAN: Good morning, Mr. Chair, commissioners, and members of the panel.

So my questions will be primarily for Mr. Amundson, as they relate to chapter 11, Traditional Land and Resource Use. But I would invite Ms. Coughlin to jump in as appropriate, because I know this subject matter is also within her area of expertise.

So I'd like to begin with a few higher level methodology questions. I just want to make sure I understand how it was applied to this chapter before I dive into my more substantive questions. So I apologize there. They are fairly basic at the beginning.

So I understand that Manitoba Hydro used certain measurable parameters to assess impacts to environmental effects associated with traditional land and resource use. Is that correct?

MS. COUGHLIN: That's correct.

MS. STRACHAN: And so I read in the EIS, and this is on table 11-15, the potential environmental effects identified related to traditional land and resource use from the project were a change in land and resources used for plant harvesting, a change in land and resources used for hunting and trapping, a change in land and resources used for travel, and a change in cultural sites.

So I understand that a change in any one of these environmental effects means that the project has in some way impacted traditional land and resource use. Is that correct?

MR. AMUNDSON: It has the potential to affect traditional land and resource use.

MS. STRACHAN: Right. Thank you.

So I further understand that a measurable parameter is meant to be a quantitative or a qualitative measure of a potential residual project effect. So in plainer terms, a measurable parameter chosen by Hydro in this chapter are meant to show the effects of the project on traditional land and resource use through showing potential impacts on these environmental effects. Is that correct?

MR. AMUNDSON: That's correct. We prefer the term effect, though, to impact.

MS. STRACHAN: And I note that two measurable parameters for these potential environmental effects were identified, and these were the availability of resources and access to land. Is that correct?

MR. AMUNDSON: That's correct.

MS. STRACHAN: And these were the only two measurable parameters used in this chapter; is that right?

MR. AMUNDSON: That's correct.

MS. STRACHAN: And so the EIS, and this is on page 11-13, it states:

"It is acknowledged that the scope of these measurable parameters does not reflect the importance of these potential changes to First Nations and Metis."

So I understand from this passage that Manitoba Hydro knew that these measurable parameters were in some way not going to be sufficient to present a complete picture of the effects to traditional land and resource use. Is that a fair statement?

MR. AMUNDSON: Let me catch up here. Which paragraph was that?

MS. STRACHAN: So this is on page 11-13 of the EIS.

MR. AMUNDSON: That's correct.

MS. STRACHAN: Thank you.

MR. AMUNDSON: If I could add to that answer? The reason for that is because, as someone doing an assessment of effects of the Indigenous people and the First Nations and Metis, and not being Indigenous person, I don't profess to speak for them.

MS. STRACHAN: Thank you. So my next few questions are focusing on a particular passage from the EIS that's on page 11-14. So it might be helpful for you to have that in front of you. So this page states:

"Beliefs or perceptions around adverse effects are difficult to quantify and not easily amenable to assessment in the same way as other project effects. Given the subjective nature of this effect pathway and the limited site specific information provided by First Nations regarding beliefs and concerns

regarding the project, a full effects characterization was not carried forward."

So hypothetically, if you had had better information, or good information on the topic of these beliefs or perceptions, would you have carried forward this effects pathway?

MR. AMUNDSON: That would still be a difficult thing to put through a complete effects assessment, simply because it's so subjective and not measurable, and almost entirely qualitative. And again, it would be professing to speak for people. The nature of the information would have to be so complete before I would be able to do that with, you know, with any kind of confidence. So we choose to look at intangible parts of traditional land and resource use more narratively and try to explain it, rather than run it through the process of an effects assessment, because of its nuances.

MS. STRACHAN: Right. And when you say it was considered narratively, and I note that's also said on this same page of the EIS, how does a narrative consideration actually factor into how you evaluate effects?

MR. AMUNDSON: After evaluating the effects of access to resources and availability to resources, even if our effects assessment suggests that there is not -- the access is not significantly altered or the availability is not significantly changed, we still acknowledge and recognize that the experience of traditional land and resource use is altered by the presence of the project. And that might, on an individual basis for each harvester, each traditional land user, might change their approach to the area of the project, and they may or may not choose to avoid that area. But we can't speak for each individual harvester.

MS. STRACHAN: So I believe you alluded to this in the answer to this question, but I'm just going to ask it to be clearer. So the beliefs and concerns referred to in the quote that I read would include whether a Metis person would think that a given tract of land is suitable for traditional use and activities?

MR. AMUNDSON: That's correct. In the Metis, the report of 2016 of specific Metis interests, it's described as diminished preference. We call it altered experience.

MS. STRACHAN: Thank you.

So again I think you have spoken to this on some level. You've said that it's very difficult to assess this because it is so subjective. But from reading other parts of the Environmental Impact Statement, for instance, in the Community Health Assessment, and I recognize this isn't your area of expertise, I note that that assessment included a lot of language around perceived risks. And so when I was reading that I thought, well, this seems rather subjective. And so would you agree that it's possible, at least in some cases, to carry forward an effects pathway or to look at an effect itself that is somewhat subjective?

MR. AMUNDSON: Again, I would answer that it's such a subjective matter that rather than attempting to do an effects assessment on it, we recognize that, notwithstanding the effects assessment on access and availability, access to land and availability of resources, that the alteration of the experience will have an adverse effect.

MS. STRACHAN: Thank you. And so again, just returning to the passage that I read

out, we have already discussed how the subjectivity made it difficult to include. But I also understand from that quote that in Manitoba Hydro's opinion, the lack of site specific data made it difficult to carry this forward. Is that correct?

MR. AMUNDSON: I would like to suggest that we did carry it forward. It's simply not a measurable parameter.

MS. STRACHAN: I suppose it's difficult for me to figure out, when reading this chapter, there were a few lines about this altered experience, and there was some in the slides in your presentation as well. But it's difficult for me to see as there wasn't actually, it wasn't formally included in the methodology, it's difficult to see how this did or could have had an impact on the significance assessment. And I have some questions on that later on, so maybe it's more appropriately dealt with when I ask those questions.

MS. COUGHLIN: Describing how we're going to deal with those kinds of effects is in that front end of the chapter. The methodological section is numbered -- the potential environmental

effect pathway. So it's described within the section where we describe how we're handling these pathways. So you're right, it's handled differently, but it's included in a qualitative way, it's discussed as a narrative. It's difficult to put numbers around that kind of thing.

MS. STRACHAN: So I would agree with you, it's difficult to put numbers around it, but there weren't really many numbers in this chapter, that I could see. I think I'm going to move onto my next group of questions, I think.

So I'd like to look at appendix 4, and this is of chapter 4, which I recognize is the engagement chapter. And I'd like to just ask a few questions about some of the appendices to this chapter because they include several templates that are related to the collection and sharing of Aboriginal traditional knowledge.

MS. COUGHLIN: Which appendix did you say?

MS. STRACHAN: Appendix 4.

MS. COUGHLIN: Which table in appendix 4?

MS. STRACHAN: So specifically I am

looking at the study work plan draft, the draft ATK protocol, and the example table of contents. And I believe that's E, F and G, 4 E, F and G.

MS. COUGHLIN: Okay, we don't have them in this copy, but I know what you're talking about, yeah.

MS. STRACHAN: Okay. So I understand that some of the templates in the appendix, which is the ATK study work plan draft budget, there was a draft ATK protocol and an example table of contents. So these documents were developed by Manitoba Hydro for use by Indigenous communities in conducting their ATK studies. Is that correct?

MS. COUGHLIN: We had a range in diversity of communities that were potentially engaged in the project, and we wanted to provide tools, access to tools if they wanted to use them. Nobody was forced to use them, they were available if they wanted to use them.

MS. STRACHAN: Sure, I understand that.

And so were these templates developed specifically for this project?

MS. COUGHLIN: They've been used in past projects, but I believe they were brought

forward and adapted to this project, subject to check.

MS. STRACHAN: Thank you.

So is it safe to assume that Manitoba Hydro designed these templates, that if the First Nation or Metis community did choose to use them, that these templates would provide Manitoba Hydro with the information that it needed for its Environmental Impact Statement?

MS. COUGHLIN: Yeah, we were open to information requests of all sorts, yes.

MS. STRACHAN: I'm not completely sure that that answered my question. Maybe I wasn't quite clear.

MS. COUGHLIN: We would provide information when asked. So if you're asking would we provide information that's aligned with what was in that template -- or maybe go ahead and ask your question again?

MS. STRACHAN: Sorry, maybe I wasn't clear. I asked if these templates were designed by Manitoba Hydro to provide it with the information that Manitoba Hydro thought that it needed in order to be able to conduct its Environmental Impact Statement?

MS. COUGHLIN: The information in those templates, I believe, is information that's typically of interest and value to communities engaged in projects, such as a linear project like the transmission line.

MS. STRACHAN: So these templates weren't designed specifically to try and provide Manitoba Hydro with the information that it needs?

MS. COUGHLIN: Well, I didn't say that. The information that is of interest to communities, information that's valued by communities is of interest to Manitoba Hydro.

MS. STRACHAN: Okay. So it is safe to assume that these templates were designed by Manitoba Hydro to provide it with the information that it deems important?

MS. COUGHLIN: Yeah, Manitoba Hydro or the communities it's working with.

MS. STRACHAN: Okay, thank you.

So I'd now like to look specifically at appendix 4F, which is the draft ATK protocol.

MS. COUGHLIN: Okay.

MS. STRACHAN: And on page 6 of that draft protocol there are:

"Examples of information Manitoba

Hydro seeks when it wants a community to share ATK with it."

And there, there's a list of questions pertaining to a whole range of topics: Animals, vegetation, forestry, rocks and minerals. And so could you tell me, was it suggested in this protocol, or elsewhere in one of these templates, that questions be asked about whether Aboriginal peoples will want to harvest, will continue to harvest, or will enjoy harvesting in the project area, more or less, after the project is built?

MS. COUGHLIN: Are you reading from a section in the page here?

MS. STRACHAN: No, I'm asking whether, in that protocol or elsewhere in its template, so for instance in this list of questions or somewhere else, was it suggested that questions be asked about whether Aboriginal peoples will want to harvest, will continue to harvest, or will enjoy harvesting in the project area, more or less, after the project is built?

MS. COUGHLIN: No. The kinds of questions included in this questionnaire aren't asking that specifically. Well, wait a second, other than hunting and trapping -- I don't want to

miss something, so just give me a moment.

MS. STRACHAN: Sure.

MS. COUGHLIN: Yeah. They're not of the nature that I think you are talking about, would you use the area after the project was built, they are more about sort of characterizing use.

MS. STRACHAN: Thank you.

And in your opinion, would it have been helpful for you to know, for example, whether a harvester would be more or less likely to hunt on or near the right-of-way, for instance, after the project was built?

MS. COUGHLIN: Yes, but this isn't the only mechanism in which we ask those kind of questions. We have had a three and a half year engagement program where we asked all sorts of questions, during the First Nations and Metis engagement process, including the one you have asked.

MS. STRACHAN: So my last series of questions relates to the assessment of the significance of residual environmental effects. And so my understanding from this and other presentations is that there was no specific

significance threshold established for traditional land and resource use, or the associated potential environmental effects. Is that correct?

MR. AMUNDSON: As it states in section 11.7 of the EIS, there's no generally accepted way to come up with thresholds for effects on TLRU, because of its subjective nature. So truly the reason that we assign significance is because it's a regulatory requirement of NEB and CEAA 2012.

MS. STRACHAN: And was this the only VC for which significance thresholds were not set?

MS. COUGHLIN: Yes, I believe so, yeah.

MS. STRACHAN: And so could you clarify for me then, the significance assessment was based on a weighing of the residual effects criteria? Is that how it was made?

MR. AMUNDSON: The approach to assigning significance is, in the work that we have done on traditional land and resource use is based on, partially on relying on the effects assessments from other relevant VCs that deal with the lands and resources that are the subject of traditional land and resource use, and simply looking at what the effects are on access and

availability of lands, and then professional judgment comes into it as well.

MS. STRACHAN: I'm sorry, I'm still not completely clear on how the significance determination was made. It seems like it was sort of a multi-factorial weighing process that really, at the end of the day, was left up to the expert judgment of the people conducting the assessment. Is that correct?

MR. AMUNDSON: Yes, it draws on the work done by much of the biophysical and socio-economic, and First Nations and Metis engagement process, the ATK studies we had available at the time, and of course the fact that the right-of-way will still be unrestricted access after construction is complete, with the exception of maintenance.

MS. STRACHAN: Just to be clear, I'm sorry, it's still a little murky to me. So before this assessment was made there was no, I guess, agreed upon matrix of criteria that would mean that an effect was significant? So it wasn't the case that if the direction was adverse and the magnitude was moderate and the duration was permanent, there was no sort of combination of

those residual effects criteria that together would mean an effect was significant?

MR. AMUNDSON: Again, because of the subjectivity of the subject matter, it would be difficult to come up with that based on checked boxes.

MS. STRACHAN: Thank you.

So I do have one final question, and it does relate to monitoring but it's very high level, so I'm hopeful that this panel will be able to answer it, as monitoring was mentioned in the presentation.

And so that question is just, do you intend in any of your monitoring programs, at this point, to keep track of whether traditional land users continue to come back to the LAA or PDA after the project is built?

MS. COUGHLIN: We hope to continue to pursue the idea of developing a community monitoring program, and that kind of information would be the kind of thing that we hope or anticipate will be discussed in that kind of group.

MS. STRACHAN: Thanks very much. Those are all of my questions.

THE CHAIRMAN: Thank you for the questions, and for the responses.

All right. We'll now move to the second set of questions for today, and that would be the Southern Chiefs' Organization represented by James Beddome.

MR. BEDDOME: Thank you very much, Mr. Chair, thank you very much panelists. James Beddome for the Southern Chiefs' Organization for the record.

I guess I have to maybe send it to a couple of panelists. My first question is, tell me how the ATK reports were taken into account when developing the technical data reports with respect to the biophysical wildlife and wildlife habitat, the heritage resources, the greenhouse gas report, and perhaps others as this panel sees as relevant?

MS. COUGHLIN: So in those early days, so we began the First Nations and Metis engagement process in August of 2013, and in those early days we began to ask questions about how people wanted to participate, and what they valued, and what people might be interested in knowing about. And understanding learnings from past assessments like

the Bipole III project that we have discussed in detail, we knew that broader level VECs were important. And so we also recognized that wildlife continued to be an important value, as well as plants, and we've mentioned that a few times throughout this process. So that, of course, reiterated the focus on wildlife and wildlife habitat, vegetation and wetlands. So we had quite a robust, fulsome field program that Marcel and Nick described yesterday.

MR. BEDDOME: Just for clarification, I guess what I'm specifically trying to understand, so maybe I'll direct one to be more precise here. So I'll direct this one to Dr. Gahbauer. So Dr. Gahbauer, when were you first engaged to, commissioned to put together your technical data report with respect to wildlife and wildlife habitat?

DR. GAHBAUER: Well, to clarify, I was part of the team doing this, so I wasn't the sole author of the report, but I've been involved with it since 2014.

MR. BEDDOME: In 2014, so that's when -- you were part of the team from the beginning?

DR. GAHBAUER: From close to the beginning. I don't think it was right from the very first stage, but early on, yes.

MR. BEDDOME: So the team might have started earlier. Do you know when the team might have roughly started?

MS. COUGHLIN: One of the team members that began from the beginning is Leanne. She's in the back table there.

MR. BEDDOME: Okay. I'm just trying to find a date when your technical data report process started with the team. You're saying I think 2014, maybe Leanne might have been involved a little bit earlier?

DR. GAHBAUER: It probably would have been early 2014 as well. The bulk of our field studies were done in 2014, and those were, as I described in the presentation, really the follow-up to some of the other data we had already gleaned. So subject to check, probably the process began in late 2013 and continued from there.

MR. BEDDOME: Okay.

MS. COUGHLIN: Leanne's searching for a date.

MR. BEDDOME: I mean, it doesn't have to be precise, like late 2013 is fine. I'm trying to go through the process here.

And so, Dr. Gahbauer, were you ever provided with a summary or any of the ATK reports that appear in appendix A of the EIS at any point in, you know, late 2013, early 2014? Or you or your team, I guess, to be clear?

DR. GAHBAUER: At that stage those reports weren't produced and available to us yet.

MR. BEDDOME: They weren't available. Was any information coming from the ATK engagement process available to you?

DR. GAHBAUER: Although we didn't have the reports available at that time, the engagement process was underway, and we had some high level information that was available to us at the time.

MR. BEDDOME: Help me understand high level information. You know, I get a sense, so like something is coming through from the engagement process, as you're out there engaging, you're getting some concerns and this is coming through. But can you further define high level information?

MS. COUGHLIN: Well, I can, because

I'm the one that heard it and passed it onto the team.

MR. BEDDOME: Fair enough.

MS. COUGHLIN: So I heard that particular, like large game species were valued, and so big game species were passed onto the wildlife team broadly. Also the idea that wildlife and plants are valued, just generally. So we did hear very general information.

And I think that speaks to that connectivity that we talked about, how we needed to deal with understanding effects from an ecosystem approach. So that connectivity is included and discussed in both the vegetation and wetlands and the wildlife and wildlife habitat chapters. So we actually did hear quite a bit of broad level input, like wildlife is important.

MR. BEDDOME: Sure. And so for the large game, were specific species identified?

MS. COUGHLIN: Yeah. I think deer were identified.

MR. BEDDOME: Any others?

MS. COUGHLIN: I'd have to go check. These would have been good questions for the engagement panel, but I can speak to what I

remember.

MR. BEDDOME: Well, I guess the reason I'm bringing them is just to see how they inform the wildlife study. Would it be fair to say probably moose?

MS. COUGHLIN: I think elk and moose were discussed as well.

MR. BEDDOME: Black bear?

MS. COUGHLIN: Yes, black bear, yeah.

MR. BEDDOME: And you know, I think the plant species, I don't want to rehash everything you went over.

MS. COUGHLIN: Rabbits.

MR. BEDDOME: Exactly. To be fair, there's a broad variety of wildlife that would be of concern to Indigenous people; that would be a fair statement?

MS. COUGHLIN: Yes.

MR. BEDDOME: And you talked about inter-connectivity, so did you -- Dr. Gahbauer, in putting your study together, did you try to incorporate the Indigenous worldview into your study?

DR. GAHBAUER: Well, I'm not entirely sure what you mean by that. We certainly, in

doing our assessment, we took the information available from the First Nation-Metis engagement process, and we valued that, as we did other data we had collected. So in that sense, yes, it was integrated.

MR. BEDDOME: Because you would recognize that Indigenous people are closely connected to the land. And it would be a fair statement to say that in biology these days, there's certainly a recognition of that value of that ATK, that there's good biological spotting, siting, and specific information that's valuable to wildlife biologists. Would that not be correct to say?

DR. GAHBAUER: Yes, we welcome and use that information.

MS. COUGHLIN: We welcome that kind of information from a variety of groups, including Indigenous organizations participating in the First Nation and Metis engagement process.

MR. BEDDOME: Now, when you're identifying certain species, though, it would be the regulatory framework more than the Indigenous worldview that would guide perhaps specific species that you might focus in on. Would you not

agree with that statement?

DR. GAHBAUER: No, not necessarily. In fact, a lot of the mammals that we focused on, the elk and the moose and the deer, are not guided by regulatory framework, they were largely driven, in fact, by the interests we heard from First Nations and Metis.

MR. BEDDOME: Fair enough. I'll give you an example. Golden-winged warblers were identified because they're a species of concern. They're identified via COSEWIC. That would be a fair statement, right?

DR. GAHBAUER: Golden-winged warbler was listed under SARA, so yes, that was one example that was driven by the regulatory side.

MR. BEDDOME: But the other bird species you didn't -- that's one that becomes particularly important because of the regulatory context, but if the Indigenous worldview pointed you towards looking at other bird species, how did you then take that into account as well?

DR. GAHBAUER: We didn't receive a lot of specific guidance to particular bird species from that source.

MS. COUGHLIN: We have a table, table

9-1 of the wildlife and wildlife habitat chapter, that provides a rationale for the selection of the different species and species assemblages that are discussed in the chapter. And a lot of the rationale included, it describes that there was concern passed on from First Nations and Metis engagement process.

MR. BEDDOME: So you said chapter 9-1?

MS. COUGHLIN: Sorry, table 9-1.

MR. BEDDOME: Table 9-1, do you mind if I just go to my table and locate that?

MS. COUGHLIN: Sure.

MR. BEDDOME: I do appreciate, Mr. Chair, and I want to know what she is referring to and it helps put it into context. Thank you, I appreciate that reference.

Now, it's fair to say, and this has, I think, has been well established, that Southern Manitoba and the project study area is one of the most -- you know, granted there's some area to the east, particularly we've heard lots about the Watson WMA and the other areas in the east, but what's clearly been established is it's in a part of the province over the past 150 years that's been heavily impacted by development. That's not

controversial; you would agree?

MS. COUGHLIN: Yes, I agree.

MR. BEDDOME: Thank you. And so in looking at some of the species, moose for instance, there is a comment that there's been a sharp decline since the 1990s. So on the basis of that, you took the conclusion that there would be negligible impact?

DR. GAHBAUER: That's correct.

MR. BEDDOME: But you would be aware that moose is a particularly important species to Indigenous people, both for sustenance traditional practices, and also spiritual and cultural connections?

DR. GAHBAUER: Yes, we acknowledged that in the report.

MR. BEDDOME: Wouldn't it be fair to say that probably part of the reason why we've seen a decline in the moose populations during the 1990s is because of increasing development in Southern Manitoba?

DR. GAHBAUER: No, I wouldn't agree with that. There was no sharp increase concurrent with the decline -- in development that is. The development is a much more long-term pattern and

it's not, it doesn't parallel the population trends of moose.

MR. BEDDOME: So the decline of moose in Southeastern Manitoba has nothing to do with historical development over time?

DR. GAHBAUER: No, that's not what I said. Over the years, certainly the change in habitat availability may have had some effect. But there was a sharp and unexpected decline in the 1990s, and that doesn't correspond to any significant change in land use at the time. There are other factors that are suspected, most notably disease, and that happens with wildlife populations at the times that there are these fluctuations. And while there may be some underlying long-term habitat changes, those can't entirely be ascribed to the effect in population changes.

MR. BEDDOME: And I hear you saying that there weren't massive landscape changes, but would it not be fair to say that sometimes the effects may take a period of time to materialize, decades maybe even?

DR. GAHBAUER: Sometimes there are long term changes. But again, for moose, there's

just no evidence of that in our contacts with Manitoba Sustainable Development. They didn't suggest at all that that was a likely cause for the change in moose populations.

MR. BEDDOME: And you stated that it's your belief, or based on your conversations with Manitoba Conservation, that disease is the reason for the significant decline in the 1990s?

DR. GAHBAUER: Disease is one of the factors, and overhunting was another one that was proposed by them.

MR. BEDDOME: Now, would it be fair to say that a larger herd, a larger moose herd would be probably more naturally able to resist disease and rebound over time? That smaller herds, just on the basis of numbers, can be more significantly impacted by disease than larger herds, particularly when it's in a more developed region where there may be a lot more habitat destruction. Would that not be a fair comment?

DR. GAHBAUER: I wouldn't say that they're necessarily more resistant, but certainly a larger population has more resilience overall.

MR. BEDDOME: Has more resilience, thank you, that's a good way of putting it. It's

almost like you're a wildlife biologist and I'm not. I thank you for that. I appreciate that.

The same would be true of elk, right, a larger herd would be more resilient than a smaller herd?

DR. GAHBAUER: Generally speaking, yes.

MR. BEDDOME: Okay. And you mentioned white-tailed deer were also identified as an important species to Indigenous people for sustenance and hunting?

DR. GAHBAUER: That's correct.

MR. BEDDOME: I think you described them as a generalist species. Did I get that right?

DR. GAHBAUER: That's right.

MR. BEDDOME: Now, is there any risk of white-tailed deer spreading disease to moose and/or elk?

DR. GAHBAUER: Yes, to moose in particular.

MR. BEDDOME: It would be fair to say that white-tailed deer would tend to use corridors like right-of-ways as a generalist species?

DR. GAHBAUER: As would a number of

species, yes.

MR. BEDDOME: What other species?

DR. GAHBAUER: Moose. Moose will use corridors as well.

MR. BEDDOME: So that could create a vector point where the moose and deer could interact and exchange disease?

DR. GAHBAUER: Well, the reality is that they are sharing the landscape entirely as it is. Neither one of those species is really restricted. So they may both use right-of-ways. They also both use existing forests and open areas. So it's not like a right-of-way is a magnet for either species that's going to draw them together.

MR. BEDDOME: So you don't -- it would be your professional opinion that that wouldn't -- there's no chance, therefore, of that being a potential contact point where disease could spread?

DR. GAHBAUER: No, that's not what I said. The probability of contact between moose and deer can occur pretty much anywhere on the landscape. So it can occur along the right-of-way or anywhere away from the right-of-way, but it's

not an area that will concentrate them and exacerbate that probability.

MR. BEDDOME: So it's not more likely to happen in a right-of-way than anywhere else?

DR. GAHBAUER: Right.

MR. BEDDOME: You identified hunting as being a potential concern for the moose population. And if I was to suggest to you that many Indigenous people would strongly and vehemently disagree with that, and would argue that they in fact have a connection with and a sense of the land and know how to maintain these populations, how would you respond to that?

DR. GAHBAUER: We certainly respect their opinion and there's no judgment implied. That was simply a hypothesis put forward by Manitoba Sustainable Development and we reported it accordingly.

MR. BEDDOME: So that's from Manitoba Sustainable Development, not from Hydro?

DR. GAHBAUER: That's correct.

MR. BEDDOME: Now, I notice that there was a concern, particularly in the construction phase of the project, about I think turtles, and I think frogs and others, that there's potentially

some impacts from that. Is that not a fair summation of what I read?

DR. GAHBAUER: Potential effects, yes.

MR. BEDDOME: I'm not sure if it can be asked of this panel, but what mitigation measures are going to be put in place to address that?

DR. GAHBAUER: Well, I can address that to some degree at least. So the concern, or the potential concern for amphibians and reptiles during construction is largely that they're terrestrial species -- well, terrestrial or aquatic, but they're on the ground relatively slow moving. And so with construction equipment in an area there's potential for essentially collisions. A few things can be done for that. One is to best understand where potential areas of risk are. So through our field surveys to date, we already understand that to some degree. And that will be supplemented through, now that the route is finalized, the construction surveys in those areas to specifically understand where those populations may be.

A second level of mitigation is through the siting of the towers. So whereas the

route may cross rivers or wetland areas, the siting of the towers can be such that, because they are several hundred metres apart, the tower footings themselves can sometimes be put in less sensitive areas, and there's a potential to shift them back and forth a little bit, if we identify through these preconstruction areas where the particular sensitive areas are. And then later on top of that, where there's still some remaining concern, there can be some seasonal avoidance of the sensitive times when these species are active, so the construction is done primarily when they are not present.

MR. BEDDOME: Perhaps I'm completely off base, and if I am, then fair enough. I'm just aware of around the world different conservation efforts that have taken place. And often they have incorporated working with Indigenous people, working with local school children and, you know, trying to integrate in the two fashions.

The first question is, is there a role for sort of direct intervention? So almost having some people on the ground doing some monitoring of turtle crossings and trying to limit the collisions? Is there a way of, you know, in a

humane way and in a way that respects the environment and doesn't cause any impact of, if these are identified, effectively picking up the turtle and safely moving it to a safer location? Can that be done?

MS. COUGHLIN: Yeah, that's one of the things we'd like to talk to the community monitoring group about. Those kinds of measures.

MR. BEDDOME: And so maybe this is better coming back to the community monitoring group. So if I'm hearing you correct, Ms. Coughlin, Manitoba Hydro is open to say engaging with local First Nations, local communities, local school groups, who might actually be able to do some of this work, both as an educational and learning and cultural opportunity, but also one that ensures that it minimizes collisions of turtles with the heavy equipment being operated? Obviously there'd be some safety concerns, I imagine, you'd also have to address. But I'm just curious if this is something that Manitoba Hydro is interested in and looking into?

MS. COUGHLIN: We're looking at many options. We're not particularly looking at school

children on active construction site, but we're definitely open to ideas from the community monitor.

MR. BEDDOME: And you're right. As I said, maybe I'm off base. I'm just trying to find a way that this can be actively engaged, become a learning opportunity. It seems Manitoba Hydro is at least acceptable to that.

I'm just thinking of some of the sea turtle conservation programs, et cetera, that have been really successful. They may not fit in the exact context here.

What are you looking at? Like I know my ideas may be off base. What types of programs have you come up with that could be something that's roughly comparable?

MS. COUGHLIN: James has a great presentation he's going to share later, James and John, all about monitoring. It's very interesting.

MR. BEDDOME: You've got me on the edge of my seat. I'll have to wait, I'll have to wait.

All right. Well, returning then a little bit, you know, let's -- and I'm going to

return to GHGs, as well as the heritage resources. But how was the ATK reports taken into account with respect to the greenhouse gas technical data report?

MS. COUGHLIN: We didn't hear a lot from the communities we engaged with about greenhouse gases specifically. So we didn't have a lot of ATK, or knowledge to share with the greenhouse gas analysis during development of the assessment.

MR. BEDDOME: I'm just going to challenge you a touch, Ms. Coughlin. You spoke about the Indigenous perspective being important about interconnectedness and the connections between things. So I guess you didn't hear it, but would you recognize that there probably is an interest there in those communities nonetheless?

MS. COUGHLIN: Absolutely, we recognize there's an interest.

MR. BEDDOME: Sort of going back to my earlier questions that I brought to Dr. Gahbauer, how about with respect to the technical data report with heritage resources, how was the ATK taken into account? When did that process start? And how was the feed through of information fed

from one to the other?

I don't know if that -- I asked a few questions earlier, so I think you have a sense of my line of questioning. But I could be more direct, if you need.

MR. AMUNDSON: No, I understand what you're asking. I can speak to that. The Heritage Resource Impact Assessment was done in early 2015. At the time that the fieldwork was done, there were no ATK reports available. There was background research done into what archeological sites were known, in the area, and trails and travel-ways are particularly important to Indigenous people. And then once we did receive the ATK reports, we were able to go back to the work that was done in the archeological assessment in the HRA, and highlight the importance of trails, and the potential for burials, although no locations are known, and other cultural sites, although again no locations are known. And of course certain cultural sites and practices are not observable by archeologists.

MR. BEDDOME: Now, if more time had been provided -- and just by way of background, we heard that this project, at least the conception

of this project started in 2007. But if those ATK reports had been given more time and they had been concluded first, before you concluded your work, do you think that would have improved your technical data report with respect to heritage resources?

MR. AMUNDSON: That's fair to say.

MR. BEDDOME: That's fair to say. And just to be clear, that's because I think you may have heard me yesterday talk about unknown unknowns, if you have more information, if you have more information you can do a better assessment; correct?

MS. COUGHLIN: Yeah. But we should be cognizant of the information that was provided by the Swan Lake, Black River, Long Plain ATK management team, where in November of 2014 they had information and discussion about heritage values important to them. So that's discussed in their TK report.

MR. BEDDOME: Okay. And sorry, just to -- so that information was in 2014, and that was actually in fact relayed into the heritage resources report; that's correct?

MR. AMUNDSON: In the form of what

values were important. As far as specific on the ground sites, there was nothing that we could walk to and look at, yet, at that time.

MR. BEDDOME: Thank you. Now, I just wanted to ask -- oh, actually there was just a real quick question. Is it Dr. Amundson, or Mr.?

MR. AMUNDSON: It's Mr. I have a Masters degree in archaeology.

MR. BEDDOME: My apology. Thank you for that. I just noticed in your report, I think there was something just briefly there, that in peat areas you saw that less likely for there to be archeological signs of things preserved. Am I getting that correct?

MR. AMUNDSON: Peat areas were not areas that people tended to live in, in the past. There's very few resources available. People pass through peat areas, people probably hunted in peat areas, but the acidity of soil in peat areas almost completely destroys any archeological evidence soon after it's deposited. So peat areas are not areas that we tend to spend a lot of time on.

If you want to get really technical, the other problem is it's impossible to dig a test

hole in peat areas, because the hole keeps closing as you're digging it.

MR. BEDDOME: Fair enough. Thank you for that. I learn something new everyday, I actually thought peat areas were good at preserving artifacts, but I stand corrected.

MR. AMUNDSON: If I could add something? You're thinking of the peat bogs in Europe where people were intentionally thrown and preserved. It's got nothing to do with the practice in North America.

MR. BEDDOME: I wasn't aware of that background. Thank you very much for that. I'm not sure what to think of that one, but thank you for that.

Now, I wanted to just talk a little bit about the greenhouse gas report, although I know other participants, I'm sure, will address it much better than myself but -- and it flows naturally from this. There's a conclusion in the greenhouse gas report that wetlands and peat lands will be minimally disturbed. Would that not be correct?

MS. COUGHLIN: We do say that in the vegetation and wetlands chapter.

MR. BEDDOME: Okay. Well, it's actually at page 16 of the greenhouse gas report, if you want my specific reference to it. There's just a line there where it indicates they would be minimally disturbed.

MR. SHAW: Yes. So in terms of the greenhouse gas life cycle assessment, we're looking at sort of the long-term quantification of greenhouse gases and long-term land use change. So while there will potentially be temporary disturbance, we're looking at minimal long-term disturbance of this area. So we assume that the carbon content of those areas will sort of be maintained as they are before the project, as they will be sort of long-term after the project is over.

MR. BEDDOME: But, you know, although they can sometimes be net -- would you not agree with me that although wetlands, for instance, can sometimes be net contributors, they can also be net sinks in respect to greenhouse gas emissions?

MR. SHAW: Yes, that is possible. Of course what we're looking at is comparing sort of the present state and future state. Our assumption was that it would maintain a relative

equilibrium for what's occurring now and what will be occurring in the future. The project itself will have no impact on sort of if that wetland changes in terms of the amount of sink it is over time.

MR. BEDDOME: I'm going to return to that. So just to confirm, at times wetlands can be a net contributor if there's a lot of methane coming off, and they can also be a sink if they're actually capturing a lot of greenhouse gas emissions.

MR. SHAW: I mean, in general, land can be either a sink or an emitter.

MR. BEDDOME: Fair enough.

MR. SHAW: So this project itself wouldn't impact how a piece of land, at least those types of land would change over time.

MR. BEDDOME: Peat lands, in particular, are some of the most carbon dense types of soil lands that we have, right? They are great storers of greenhouse gases.

MR. SHAW: Yeah, there's quite a bit of carbon inside peat land.

MR. BEDDOME: But your greenhouse gas assessment, basically there's no impact whatsoever

from impacts on wetlands or peat lands, you assume there will be no disturbance?

MR. SHAW: Not no disturbance, but we won't be clearing significant areas unless there are trees on those areas. What we look at, as part of this assessment, is removing carbon stock from the area, so essentially removing trees, potentially high shrub. But we're not looking at permanently impacting the soil.

MR. BEDDOME: But if a tower was to be placed on a wetlands or a peat lands as the siting went along, there could be some greenhouse gas impacts from that tower itself?

MR. SHAW: Yeah. So we did take the tower footprint into consideration and assume that all mass would be removed.

MR. BEDDOME: Okay. Did you assume that all mass would be peat lands?

MR. SHAW: No, whatever was up in the geographic survey of the right-of-way. Once again, we're just looking at mainly change to the surface.

MR. BEDDOME: Now, in terms of the life-cycle analysis, 57 per cent of the greenhouse gas contributions is coming from line loss; that's

correct? I can find you the reference if you need it. There's a really nice pie chart in there I took that from. It's at page 121.

MR. SHAW: Sorry, so you should go to page 20 and look at the summary. There's a table there. If you look down to land use change, the total impact of land use change will be emissions of around 76,500 tonnes of CO2e, which would work out to about 45 per cent of total life-cycle emissions from the MMTP project.

MR. BEDDOME: I guess what I'm getting at is you look at line losses, right? And I guess that ties into some of the earlier comments about sustainable development and Manitoba Hydro, effectively that Manitoba electricity, although it has a lot of impacts that I think it should be acknowledged is, generally speaking, a lower greenhouse gas emitting power source than say a coal plant. That would be fair to say; right?

MR. SHAW: That's fair to say.

MR. BEDDOME: So is that why the line losses were taken into account?

MR. SHAW: So as part of this life-cycle assessment, we looked at three different impacts. One is called non-generation

effects. That would be the traditional assessment of a project, its life-cycle emissions over life, including construction, operation and decommissioning.

On top of that there are something we call generation effects. So because this is a transmission line, once it's put in place it will have impacts on the greenhouse gas emissions sort of in the rest of the electrical system.

So from a line loss perspective, the greenhouse gas emissions are an indirect loss when we're transmitting electricity through, so there is no actual direct greenhouse gas emissions, it all depends on the source of supply.

So for this project, when we're looking at exports from the line, obviously the source of power is basically non-emitting. So there are essentially no line loss emissions from export of power on this project. In fact, because we're bringing in the Manitoba-Minnesota Transmission Project, we'll be able to lower the average long-term intensity of generation within Manitoba, which means from the export perspective, it will actually reduce line loss greenhouse gas emissions.

So when we're looking at the emissions here, and I'll point you to that pie chart on page 22, so the bulk of those losses are related to emissions from imported energy. And you can't really just look at the import line loss greenhouse gas emissions, you have to take a more holistic approach. So what we're looking at here is when we're importing energy during a drought situation, we essentially have two options. We can either run thermal plants in Manitoba, which will obviously emit greenhouse gases; or we can import from mostly the U.S., and then of course because of transmission there will be some line loss emissions associated with that. But these line loss emissions will be a small per centage of sort of the thermal generation emissions related to whether we choose to run a plant in Manitoba or import energy.

MR. BEDDOME: So, would it be fair to say -- just give me a second here, sorry. And thank you for that.

I guess in this case you're kind of taking into account the broader electricity market, and thank you for that, whether we're importing and we are importing from higher

emitting sources in the States, or whether we're exporting and potentially displacing higher emitting sources, but your greenhouse gas assessment doesn't actually try to assess that fact; right? It doesn't go that far, it's looking more at the project itself. Is that a fair summation? Did I get it right? Maybe I didn't?

MR. SHAW: No, that's not a fair summation.

MR. BEDDOME: So you are looking at the overall impact in terms of the displacement impact?

MR. SHAW: Yes, we did assess the overall impact of the line.

MR. BEDDOME: So, and I get that, if we're using hydro and we're displacing coal, that makes sense. But what would be the greenhouse gas impacts if a lot of that hydroelectric energy was say used to power the Energy East Pipeline, would that change your greenhouse gas assessment?

MS. COUGHLIN: That's outside the scope of what we have done here.

MR. BEDDOME: Fair enough. I guess the reason I'm asking, though, is if we're taking this broader account in one way, wouldn't that

change your equation? Or, you know, I'm not sure if you understand what I'm saying, sir?

MR. SHAW: For our assessment we assumed sort of the reference caseload forecast.

MR. BEDDOME: You assumed the reference caseload forecast. So, although you're talking about the dynamic nature of the electricity market, it's really difficult to say because things may change drastically over a couple of years. Would that be fair to say?

MR. SHAW: Yes, the load forecast has a range of uncertainty.

MR. BEDDOME: Those are all my questions. Thank you very much.

THE CHAIRMAN: Thank you for those questions, and again for the answers.

All right. That will bring us to our next participant, Peguis First Nations, represented by Mr. Valdron.

MR. VALDRON: And a good morning to you all. My name is Den Valdron, representing Peguis First Nation with respect to this matter. This is for the monitor.

I have a few questions, possibly more than a few, but I'm sure we'll get through them.

All right. I guess broadly I'll start with traditional land and resource use, but I may jump around a bit. So if one of you feels that you can answer the question better, feel free. Let's start up.

So I heard yesterday that the estimate in the presentation is that approximately 60 per cent of lands in the area are now developed lands, and that leaves only about 40 per cent of lands as Crown lands left available for traditional land use, TLRU. I also heard that there was an estimate that approximately 4.8 per cent of lands would be affected for TLRU. Is that right?

MS. COUGHLIN: I don't think your numbers are correct. Could you just run through them again?

MR. VALDRON: I believe that there's approximately 40 per cent of the lands in the area as Crown lands.

MS. COUGHLIN: No. Total for the line, it's 26 per cent Crown lands for the PDA.

MR. VALDRON: 26 per cent Crown lands.

MS. COUGHLIN: Were you perhaps referencing a different assessment area? Maybe

the LAA or the RAA?

MR. VALDRON: The RAA.

MS. COUGHLIN: Is that what you're referencing?

MR. VALDRON: I think so.

MS. COUGHLIN: Okay, we'll check the numbers.

MR. VALDRON: Because I did hear 40 per cent.

MR. DE CARLO: So I believe what you were looking at, the numbers you are referring to are from the vegetation and wetlands assessment, and those numbers are for the regional assessment area.

MR. VALDRON: The regional assessment area, yes.

MR. DE CARLO: And there's approximately 60 per cent of the land that is either agricultural land or developed. The remaining 40 per cent is a combination of both private and Crown, not specifically Crown land.

MR. VALDRON: Okay. And how much of that remaining 40 per cent is Crown land?

MS. COUGHLIN: I think it's approximately 13 per cent or 14, subject to check.

MR. VALDRON: So 13 or 14 per cent -- I'm not going to hold you to, you know, that last per cent -- is left for traditional land use?

MS. COUGHLIN: People can conduct activities where they have permission on private lands.

MR. VALDRON: But by and large, you're talking about 14 per cent of total areas left for First Nations, subject to a few percentage points when they get permission?

MR. AMUNDSON: First Nations and Metis can practice traditional land use wherever they have permission to do so.

MR. VALDRON: Okay. Do you have figures on how much permission or what the scope of those permissions are? What's the average?

MR. AMUNDSON: We don't have any figures or statistics on that, but the ATK studies show traditional land use throughout the area, not just in Crown lands.

MR. VALDRON: Okay. So then say the answer would be 14 per cent, plus whatever they can get permission for?

MS. COUGHLIN: Yeah. If you refer to many of the self-directed studies, you'll note

that traditional activities occur throughout the project area.

MR. VALDRON: Yes. But obviously they wouldn't occur through the developed or agricultural areas for the most part?

MS. COUGHLIN: Well, they in fact do. They occur broadly.

MR. VALDRON: So you're saying that traditional activities are occurring unhindered all through the area?

MS. COUGHLIN: I didn't use the word unhindered.

MR. VALDRON: Okay. Well, how much of this area is regularly used for traditional activities, in terms of beyond that Crown land?

MR. AMUNDSON: We can't speak to the regularity of the use, but the ATK studies do show traditional land use places and areas and trails and travel-ways throughout the area, not just Crown land.

MR. VALDRON: So you're saying that it occurs through about 40 per cent or more?

MR. AMUNDSON: I think we're talking about two different things here. You're speaking of the RAA for wildlife and vegetation, and we are

assessing the effects on the local assessment area.

MR. VALDRON: Well, I'm just going on traditional land and resource use. That was the section that you spoke on; right?

MR. AMUNDSON: Correct.

MR. VALDRON: Okay.

MR. AMUNDSON: I can't speak to a percentage of area based on the information we have from the ATK studies.

MS. COUGHLIN: But if you look at the Peguis data, you could see usage throughout the area.

MR. VALDRON: Does the Peguis data specify whether it's Crown land or private land?

MR. AMUNDSON: The map for the Peguis data shows a variety of different geographical features, but it doesn't have land tenure on there, but it can simply be compared with other maps. And the traditional land and resource use activities, trails, travel-ways, and areas of importance are throughout the entire area.

MS. COUGHLIN: And this was shared by more than just Peguis First Nation.

MR. AMUNDSON: Right.

MR. VALDRON: But as I understand it, the maps of Peguis and other First Nations' use simply depict dots or points, it doesn't depict polygons, or areas, or broad space?

MR. AMUNDSON: Some of them depict polygons, large areas.

MS. JOHNSON: Could I just interrupt for a second? A lot of people in the audience are having a hard time hearing you. Could you please speak closer to the mic, all of you, because there's quite a wind apparently blowing at the back there and they can't hear.

MR. VALDRON: All right. This has turned out to be unexpectedly detailed, but are you prepared to estimate how much of the total RAA is used regularly or is typically available to Peguis or other First Nations?

MR. AMUNDSON: Would you repeat the question, please?

MR. VALDRON: Okay.

MS. COUGHLIN: Like Hydro won't manage the RAA.

MR. VALDRON: No, but --

MS. COUGHLIN: And the right-of-way will have open access for people to use outside

construction and maintenance windows. So people can use the right-of-way when they choose. And how they use the RAA, it's not up to us. And the traditional knowledge studies have done a great job of documenting use of the area, the entire project region actually.

MR. VALDRON: Well, we will get to the right-of-way. So I certainly appreciate that answer. That will be helpful. But with respect to the RAA, I mean, what we're talking about here is impacts on the First Nation and on traditional land and resource use. And before I can really assess, or have my clients assess the impact on resource use, I think it's fair to talk about, you know, what level or what the scope of resource use is in that RAA.

MR. AMUNDSON: Again, the ATKs typically present traditional land and resource information as geographic locations or geographic areas, and we don't have much data on the frequency, or periodicity, or regularity of use. So we just know the places that are used, and they can be over a broad range of time, they could be both for current use and for living memory.

MR. VALDRON: All right. So let's try

and approach this from a different angle. You'll agree that the lands in the RAA used by First Nations is more than the 14 per cent of Crown lands?

MS. COUGHLIN: Yes, we agree.

MR. VALDRON: Okay. Now we're getting somewhere.

And you'll agree that it's also, because of agricultural and because of development, less than 100 per cent?

MS. COUGHLIN: Any area in the RAA could be used for traditional use activities, as far as we know, if there's permission granted.

MR. VALDRON: A parking lot?

MS. COUGHLIN: Yes, or a quarry if that's so to their choosing. I guess apart from the legal discharge of firearms, Butch is correcting me.

MR. VALDRON: Well, there would definitely be issues there.

MS. COUGHLIN: Sorry, I should have been more specific.

MR. VALDRON: I suspect that there may also be a lack of success in searching for traditional medicines in a parking lot?

MS. COUGHLIN: We could agree with that.

MR. VALDRON: Okay. So more than 14 per cent, but less than 100 per cent?

MR. AMUNDSON: Making that judgment is outside the scope of our assessment.

MR. VALDRON: All right.

Now, I also heard the number 4.8 per cent of lands affected. Now, does that describe the PDA versus the RAA?

MS. COUGHLIN: We're just finding the exact reference.

MR. VALDRON: Take your time.

MS. COUGHLIN: Yeah, that was referenced in, that was the 4.8 per cent reduction in forest cover within the LAA.

MR. VALDRON: Okay. So that's just forest cover, that's not the Crown land within the RAA?

MS. COUGHLIN: No.

MR. VALDRON: Okay. So what's the percentage of reduction of Crown land?

MS. COUGHLIN: There is no reduction in Crown land.

MR. VALDRON: Okay. I phrased that

badly.

I guess my clients are concerned about their interests constantly being whittled down. So that's kind of where I'm going. This route goes through approximately 30 per cent of Crown land and through 70 per cent of private land; is that correct?

MR. AMUNDSON: 74 per cent freehold land and 26 per cent Crown land.

MR. VALDRON: 26 per cent, okay.

All right. And you would agree with me that regardless of interest on private land and regardless of practice on private land, the First Nations rely on Crown land as the sort of bull work, or the place where they are definitely always able to practice; correct?

MR. AMUNDSON: Crown land is a place where First Nations and Metis can exercise traditional practices without having to ask permission.

MR. VALDRON: Okay. So obviously that's quite important to them. Would that be correct?

MS. COUGHLIN: Yes.

MR. VALDRON: Okay. So once Crown

land is taken up or intruded upon, it's gone forever. There's not a lot of history of land, private land being restored back to Crown land; is that right?

MR. AMUNDSON: Are you speaking generally or are you speaking about this project?

MR. VALDRON: I'm speaking generally.

MS. COUGHLIN: So traditional practices can still occur on the right-of-way once the project has been constructed.

MR. VALDRON: Well, I certainly do appreciate that. And one of the things we'll be talking about is how these traditional practices are carried out.

Now in your studies and evaluations, was there any assessment of how much land was required for traditional practices? Did any of that come through in ATK?

MR. AMUNDSON: That kind of quantification wasn't provided to us.

MR. VALDRON: Okay. You'd agree with me though that, for instance, if a First Nation's practice is hunting deer or elk, there has to be a sustainable population of deer or elk? And if the population is too small, then obviously you're

just destroying a species?

MS. COUGHLIN: Yes.

MR. VALDRON: Okay. Then in order to sustain aboriginal practices with respect to various species, ranging from big game to medicinal foods, a certain amount of territory has to be required. And the requirements for each species or each game or medicine or country food will change, but they all require territory; correct?

MR. AMUNDSON: The results of the wildlife and vegetation and wetlands assessments have demonstrated that there's no significant residual effect on the abundance or the distribution of a species. They're also important for traditional land and resource use.

MR. VALDRON: Okay. I guess I'll just kind of divert a little bit there. Why did you combine vegetation and wetlands?

MR. DE CARLO: Well, specifically for wetlands, it's a multiple discipline item, including hydrology, vegetation, and others. And vegetation is an important factor for wetlands. That was the reason for combining it.

MR. VALDRON: Well, obviously

vegetation is an important part of wetlands, but you just said wetlands includes a whole bunch of things. Shouldn't it have been its own subject?

MR. DE CARLO: It could have been its own subject. It was a matter of choice to include it within vegetation.

MR. VALDRON: Okay. I'm just asking why. Why did you make that choice?

MS. COUGHLIN: We wanted to have a chapter where we could have like a discussion on vegetation effects broadly and thoroughly. And we thought having it in one place would have a continuity to that discussion. And it speaks to having those broader level VCs. And so that was part of the decision why we wanted to include them together.

MR. VALDRON: So, vegetation was the most significant or important part of wetlands, so you just include wetlands with vegetation?

MS. COUGHLIN: It was to allow that continuity of discussion.

MR. VALDRON: Okay. Now, one of the issues for my clients, of course, is not just the fact that their land areas are continually being diminished and subject to external discretion.

They are also concerned with fragmentation. And I'm hearing -- and I've read your reports, and thank you very much, and I have listened to your presentation -- that there is still sufficient land available for them to carry on their practices. But one of the issues, for instance, I wondered about was with respect to fragmentation. Because that does seem to be a little bit different, depending on species. You know, if we're talking a medicinal plant, fragmentation of territory may not make that big a difference. If we're talking elk or deer or big game, fragmentation may well have an impact. Would you agree?

DR. GAHBAUER: Not necessarily. There's a lot of confusion, and this is generally speaking about loss versus fragmentation. And for a lot of species, fragmentation really isn't the issue.

MR. VALDRON: Okay. Well, you have articulated there's a lot of confusion and obviously I'm confused, so I'm going to ask you to clear up that confusion as you see it.

DR. GAHBAUER: Certainly. So habitat fragmentation is something that since the, you

know, 1970s or so has been put forth as this really driving cause of ecological change. And when you burrow down into the research, the vast majority of time it's actually loss of habitat that's responsible for changes that are seen.

So fragmentation chiefly is an issue when you have species that are particularly sensitive to area requirements and those area requirements are no longer met as a result of actual fragmentation into smaller parcels.

MR. VALDRON: Okay. So in your opinion then, fragmentation is not a central issue, it's loss of habitat?

DR. GAHBAUER: In most cases, yes.

MR. VALDRON: Okay. And I believe you mentioned that some species were more vulnerable because of loss of habitat. What species would these be?

DR. GAHBAUER: For loss of habitat?

MR. VALDRON: Well, as you were discussing -- I may have misstated you.

DR. GAHBAUER: Well, almost any species at some point is vulnerable to loss of habitat. It's just a question of degree really.

MR. VALDRON: All right. And in terms

of the species that we're dealing with here in wildlife, which species would be most susceptible? I mean, what species are most likely to be impacted?

DR. GAHBAUER: Well, again, it's not a matter of ranking species. Every species that loses habitat is affected by losing habitat. It's not that there's a priority list. I'm not understanding the question I guess.

MR. VALDRON: Okay, okay. I'll move on I think.

THE CHAIRMAN: It's the Chair, Serge Scrafield. It's just about 11:00, so I wanted to get an idea of how much longer. If it's going to be a while then we'll break and come back.

MR. VALDRON: It's going to be a while.

THE CHAIRMAN: All right. We'll take a break then and we'll be back here at 11:15.

MR. VALDRON: Okay.

(Recessed at 10:59 a.m. to 11:16 a.m.)

THE CHAIRMAN: All right. I'm wondering if you can all take your seats? We're going to get started here with the questioning. So in fairness to Peguis First Nation and Manitoba

Hydro, we will start the questioning. So take it away.

MR. VALDRON: All right. You guys all set?

MS. COUGHLIN: Yes.

MR. VALDRON: Excellent.

All right. Thinking back to my earlier questions, I thought I would just kind of try and sort of what this traditional land and resource use segment comes down to. So correct me if I'm wrong, but when we're looking at this chapter on traditional land and resource use, most of the information in that chapter is coming from First Nations, from Peguis, from MMF, from Dakota and others, as ATK, and whatever other acronyms. And if I'm understanding what's going on here, you're taking that information you've received from First Nations, and you are trying to reconcile it with the other information from your valued components. Is that correct?

MR. AMUNDSON: One of the approaches we take to the assessment of effects on traditional land use is the assessment of effects on species and places that First Nations and Metis have identified as being important to them.

MR. VALDRON: Okay. So things are being identified to you through the ATK, and you're going out and doing your own research on them?

MR. AMUNDSON: Me personally?

MR. VALDRON: Well, no, the collective group of you. I don't anticipate that you'll be standing in the field counting moose. You can if you want to, you can do whatever you want with your own time.

MR. AMUNDSON: Could you repeat the question, or could I repeat what I think you were asking?

MR. VALDRON: Repeat what you think I'm asking.

MR. AMUNDSON: Are you asking me if Aboriginal traditional knowledge contributes to the study design of the other valued components?

MR. VALDRON: No, I don't think that was the question I was asking.

MR. AMUNDSON: Then I didn't hear you correctly. I'm sorry.

MR. VALDRON: My understanding of your answer is that you took, or received traditional Aboriginal knowledge. You consulted with the

First Nations, which is a very good thing, and they communicated with you, which is a very good thing, and they identified areas of concern. And you went off, and Manitoba Hydro investigated those concerns?

MR. AMUNDSON: So what I can say in answer to that question is that the knowledge gained from communicating with First Nations and Metis had an influence on the assessment of effects, not just on traditional land and resource use, but also on other biophysical valued components.

MR. VALDRON: Okay. And what influence did it have?

MR. AMUNDSON: Key concerns such as species that are valued by First Nations and Metis.

MR. VALDRON: Okay.

So, give me an example as to how that would implement? So for instance, if they come to you and they say, you know what, we really like hunting elk, there's elk up and down this area, do you just jot that down and say, okay, elk are important, or do you take further investigations and say, well, what's the health of the elk

population?

MR. AMUNDSON: As Dr. Gahbauer mentioned earlier today, that is the reason that moose, elk and deer were chosen as species of interest for the effects assessment on wildlife.

MR. VALDRON: Okay.

So then essentially you received ATK information and this influenced some of your research?

MS. COUGHLIN: So information was received throughout the First Nations and Metis engagement process. And early information helped us to understand what was valued and considered important to those involved in that process. And that helped influence both broad topics, like what I think you are asking is how were those concerns assessed? And it also influenced the way we described effects. So the way that experience might change is described in the traditional land and resource use chapter, which is what Butch is describing.

MR. VALDRON: Thank you. That's a good answer and I appreciate it.

Now, something came up yesterday, I just wanted to confirm, because I want to build, I

want to ask a few further questions about this. But with respect to the ATK information that you had, there was no specific breakdown, or no real ability to break down in terms of First Nations and Metis resource use through the area as to where that resource use was going, as to which families, or groups, or clans, or particular bands, or populations were prioritizing or ignoring areas or how it was divided up within that population. Is that correct?

MS. COUGHLIN: So communities provided information based on how they wanted to provide it. So the MMF provided an entire report all based on activities and use from the Metis people.

MR. VALDRON: Okay.

And so as I understand it, with respect to use, although we've got a good idea of where use is happening and what species are being used, what medicinal plants are sought, and where people are going, we don't have a really clear picture as to frequency or intensity. So an area might be visited once, or it might be visited dozens of times, but we're not able to really assess frequency or intensity. Is that correct?

MR. AMUNDSON: We can only use

information that we receive through the self-directed studies. And if that information isn't available, we can't portray it in the assessment.

MR. VALDRON: Well, I appreciate that, but what I'm asking is what were the limits of the information you received? So you didn't receive frequency or intensity, you just received areas of use. You received a certain quality of information.

MR. AMUNDSON: Well, irrespective of that, we still used the conservative approach and we assumed at any given time that traditional land and resource use could be occurring.

MR. VALDRON: Okay. So that's your default, that once an area is identified, it's potentially available for use at potentially any time?

MR. AMUNDSON: On Crown land, yes, and on private land with permission.

MR. VALDRON: Okay. I'm glad you added private land with permission because I didn't want to go back to that.

All right. So if we don't know the local breakdowns of users, and we don't know the

local intensity of use, then it's possible that there may be areas where, you know, where if you evaluate an impact as negligible, there may be specific areas within that zone where the impact is not negligible because of intensity of use?

MS. COUGHLIN: We didn't assess a negligible effect for traditional land and resource use. We presumed use of the area.

MR. VALDRON: Okay. I appreciate that clarification. And along those lines, no indication of total consumption through the area, so no indication of how much meat was being taken out, how many berries, quantities produced, whether production has gone up and down, so no information as to how much country food meant to the diet of particular communities?

MR. AMUNDSON: There was no quantified country food studies. All of the Aboriginal traditional knowledge studies suggested that country food is important.

MR. VALDRON: Okay. But within that statement of importance, it's difficult to really break the information down any further?

MR. AMUNDSON: Correct. And that's why we take a conservative approach to their

assessment of effects.

MR. VALDRON: And I do appreciate that.

All right. Now, with respect to your powerpoint presentation, I was looking at box 14 -- yeah, box 14, key findings. You've got two powerpoint presentations, I'm not sure which one to direct you to?

MS. COUGHLIN: Are you talking about the traditional land and resource use presentation?

MR. VALDRON: Yeah, that's the one. Traditional land and resource use, I believe the first one which stipulates key findings at box 14. There we go. Excellent.

Now, box 14 refers to:

"...long established trails and travel-ways that connect communities, harvesting areas and gathering places and a network of traditional use and cultural patterns."

Would you agree with me that long-established use suggests optimum use, i.e. that it was easier or better to go somewhere else, then they'd have done that. And if this is the

place that they always go to, then it's the most convenient place, or it's the most successful place, it's the preference?

MR. AMUNDSON: The reference here to long-established is the travel-ways. So it's the ways to get from place to place.

MR. VALDRON: And that's the preferred ways?

MR. AMUNDSON: Correct.

MR. VALDRON: The optimum travel-ways?

MR. AMUNDSON: Yeah, they are long established.

MR. VALDRON: Okay.

So, if they can't use the long-established trails and travel-ways, then obviously they're having difficulty, they've either got to go further or they have to go to less desirable areas, or they have to expend more effort, possibly, for less result. Will you agree with any of that?

MR. AMUNDSON: Could you be more specific?

MR. VALDRON: Well, I'm just saying a long-established trail or travel-way is essentially the optimum route, for one reason or

another. And if that's interfered with or if you can't have a long-established trail or travel-way, then that's a step down, that's a difficulty, that's an adverse effect?

MR. AMUNDSON: If I could offer an explanation from my experience?

MR. VALDRON: Sure thing.

MR. AMUNDSON: Because I've got a long career of being an archeologist in the prairies, and the long-established trails and travel-ways that are used by people are called desire lines, because they're the easiest place to cross the landscape. These have been established for a long time. They were used in precontact time. They became cart trails in the early historic period. And now most of them are roads and rails. So when you look at a map on the prairies and you see a road that doesn't follow the grid road system, it's probably a trail that was established a long time ago.

MR. VALDRON: That's fascinating. You call them desire lines or desire lanes?

MR. AMUNDSON: That's correct. It's the easiest path to cross the landscape. Most of them are now roads.

MR. VALDRON: Okay. I just want to get the term correct because I love just learning new things. You said desire line?

MR. AMUNDSON: Correct.

MR. VALDRON: Or desire lane?

MR. AMUNDSON: Desire line.

MR. VALDRON: Okay. Thank you.

Is there any interference with the established desire lines?

MR. AMUNDSON: Like I said, most of them are now roads or rails, because they are also the best place to build roads and rails, because they're the flattest place across the landscape that lead to the easiest places to cross the waterways.

MR. VALDRON: I agree, but if you look at those pictures, we're not looking at roads or rails, or if they are, they're really tiny trains. So obviously those are trails.

Is there any interference with any of those trails?

MR. AMUNDSON: Those trails are from the RAA, those photographs, just to be illustrative. They are not on the LAA.

MR. VALDRON: Okay. Is there any

interference with trails or desire lines on the LAA?

MR. AMUNDSON: The project will cross roads that probably at one time in the history started out as footpaths.

MR. VALDRON: Okay. But in terms of footpaths within the LAA, is there any interference with those?

MR. AMUNDSON: Not that we have any information on.

MR. VALDRON: Okay.

Was this something that you guys were turning your minds towards, or something you were specifically looking towards?

MR. AMUNDSON: It's one of the four categories of traditional land and resource use that we always look at when we assess effects.

MR. VALDRON: Okay.

So as far as desire lines -- I like that -- so as far as desire lines go, there's no effect there at all, in your view?

MR. AMUNDSON: We say that the effect is that there will be an altered experience of traveling for traditional purposes.

MR. VALDRON: What do you mean,

altered experience?

MS. COUGHLIN: We can refer you to the section of the EIS that describes the effects to trails and travel-ways.

MR. VALDRON: Okay.

I'll tell you what, I'm going to let you just fill me in on that information in a little bit, but I'm just going to keep things moving. Thank you.

MR. AMUNDSON: Thank you.

MR. VALDRON: I've got chapter 11 right here.

MS. COUGHLIN: It starts at 11.4.4, if that helps.

MR. VALDRON: Okay. We'll fill that in. But before I leave the topic, I'm just going to suggest to you that a change of availability and alteration is actually a reduction. Yes? No?

MR. AMUNDSON: I wouldn't agree with that. There's no reduction in the ability to travel, based on what we know. Only a potential for the experience of that travel to be affected.

MR. VALDRON: You could have just said no, that would have worked too. That's all right. We're doing fine.

All right. And I see there's a distinction in boxes 17 and 18, I believe. Well that's not really pursuant to boxes, but I believe that in the presentation there was a distinction made between say cultural and ceremonial sites and hunting and gathering sites. Is that correct? And just ignore that reference -- I misread my note.

MR. AMUNDSON: Please restate your question for me?

MR. VALDRON: Is there a distinction made between cultural sites and hunting and gathering sites?

MR. AMUNDSON: Typically hunting and gathering refers specifically to the places where animals are killed for food purposes, plants are gathered for certain purposes, medicine and food, or wood for firewood, that sort of thing.

Cultural sites are a broad range of sites where different activities are practiced. Ceremonial sites are specific to ceremonies such as the sun dance.

MR. VALDRON: Okay. And would I be correct, and I'm happy to be shown that I'm wrong, would I be correct in assuming that one of the

differences between cultural and ceremonial and hunting and gathering is that cultural or ceremonial sites, like for instance a graveyard, is linked intrinsically to the land. It can't be moved, it's fixed. Whereas the idea with hunting and gathering sites is that you can pick medicine or hunt or trap somewhere else. Would that be a distinction that you were making?

MR. AMUNDSON: Burials have a location in space that can't be altered.

MR. VALDRON: Yes. But hunting and gathering can be moved around?

MR. AMUNDSON: By its very nature it requires mobility.

MR. VALDRON: Okay. So if there's interference with, or loss of a hunting and gathering site, then the sense is that that's not as big a loss because they can carry on that activity somewhere else. Is that a fair assumption?

MR. AMUNDSON: If you're referring to this project after construction is complete, there will be unrestricted access to the right-of-way, so there won't be a loss.

MR. VALDRON: All right. Now, with

respect to the construction of the project actually, one of the things I heard yesterday, and I believe I heard it from the Fisheries guy, and I'm sorry, I just go blank on names. It a terrible thing, it runs in the family.

MS. COUGHLIN: His name is David Block.

MR. VALDRON: I'm going to remember that for five seconds. It's my fault, it's not his. He's a very memorable person.

But one of the things I think I heard from him is that even within the selected route, if approved here, there would still be some latitude with respect to placement of towers along that route. Is that correct?

MR. BLOCK: I don't recall saying that, but there is some flexibility in tower placement, if that's the question.

MR. VALDRON: Okay.

THE CHAIRMAN: Sorry, this is the Chair, and I know you are sharing mics, so that's probably part of the issue. But it was very difficult to hear the last answer there.

MR. VALDRON: Yeah, I got that. Maybe speak right into the mic there.

MR. BLOCK: There is flexibility in tower placement.

MR. VALDRON: All right. Good stuff.

Now, box 21, or powerpoint thingy, I call them boxes, suggests that after construction access will be unrestricted.

How long is construction going to take? And I know it's been stated but I just want to hear it.

MS. COUGHLIN: Okay. So construction won't all be occurring across the entire right-of-way at the same time. So it will be in different parts along the way. And subject to check, I think it's over a few years, so three years.

MR. VALDRON: Over a few years?

MS. COUGHLIN: Yeah.

MR. VALDRON: And when are your main construction times? I believe -- well, no, just when are the main construction times? Is it like ongoing through the year over those two years, or do you pick particular seasons?

MS. COUGHLIN: Well, construction is throughout, but I'm not the best person to ask about construction timelines. I could go back to

the project description, if you'd like?

MR. VALDRON: Okay. No, that's okay that's okay.

So let's take a hypothetical specific area, a specific piece of line through a specific piece of Crown land. How long would it take to erect that, at that area, would it be one, two months?

MS. COUGHLIN: I don't know. I'm not a construction person.

MR. VALDRON: Okay.

Once construction takes place, how long did those effects last? And I know that there would be different kinds of effects. So for instance, you might have some compaction or rutting, there would be noise which would be highly transient, I suppose, at least the noise of construction, dust raise. Is there any assessment as to the lingering effects of construction, apart from construction itself?

MS. COUGHLIN: So, construction effects are described in each valued component chapter of the Environmental Assessment, and we have divided the effects assessment into construction and operation, and each section of

the valued component chapters describes construction effects and they are, of course, specific to the valued component being described or assessed.

MR. VALDRON: Okay.

What I was curious about was not necessarily the construction and effects per se, but the impacts of construction and effects on the ability to use the area. Because I assume that there will be a window of time when the area simply isn't available for traditional use?

MS. COUGHLIN: That's correct.

MR. VALDRON: Okay. And ballpark, would that be two months, three months?

MS. COUGHLIN: So that will change. There will be some construction that will occur on some parts of the PDA, because construction won't occur across the entire right-of-way at one time, it's going to be done in sections. So when there is an active construction site on one part of the right-of-way, that will not be available to conduct traditional activities.

MR. VALDRON: Okay.

And then I guess in box 21, I guess we're concerned that even with post construction

access, the area will still be impacted somewhat. There's maintenance activities that will be occurring at critical periods.

Will there be consultation as to scheduling of maintenance activities so as to not to interfere with traditional activities?

MS. COUGHLIN: We're open to talking with communities, to find out timelines that will coordinate well.

MR. VALDRON: Okay. Is there a policy currently in place for that right now?

MS. COUGHLIN: There is not a policy, to the best of my knowledge, in place that dictates timelines based on harvesting --

MR. VALDRON: Okay.

MS. COUGHLIN: -- but we're open to discussion on that topic. The essence of what I was saying was that we don't have a formal policy in place yet, but we're open to talking further about coordination with communities to determine what might work best.

MR. VALDRON: Okay. Have First Nations asked for that discussion?

MS. COUGHLIN: The MMF has asked.

MR. VALDRON: Okay. And you haven't

had the request from Peguis yet?

MS. COUGHLIN: No, not to the best of my knowledge, no.

MR. VALDRON: Okay. I would assume that request will be coming in.

THE CHAIRMAN: This is Serge Scrafield, Chair. Just one question for you, but before that just one point. We should probably be careful not to try and question and answer, or answer and question at the same time, just to make it easy for the transcriber. She's very patient and I can usually sort it out, but just to make it easier.

MR. VALDRON: I will be a bit more careful.

THE CHAIRMAN: Well, I'm not sure, I had actually stepped away from the mic for a minute, so I'm not sure who was interjecting, but just so we're careful about that. So that's one point.

Second point is, we had marked you down for 30 minutes and we're at about 50, 55 minutes now. I have taken the break out of there, of course. How much longer do you intend to be?

MR. VALDRON: I do apologize, I've got

several more pages of questions.

THE CHAIRMAN: Any time estimate on that?

MR. VALDRON: I'd say about an hour.

THE CHAIRMAN: Can you find a way to get it done by the time we break here, which is going to be around 12:30? I'm cognizant of our overall time. There's lots of other groups with questions, and we're trying to stay more or less on schedule. We are behind. We made up some time yesterday, and I should thank all participants for that, but I do want to bring us as close to our schedule as we can.

MR. VALDRON: All right. I think I can probably edit some stuff out. Won't be the cross-examination I want, but I think I can streamline it a bit.

THE CHAIRMAN: Okay. Well, I appreciate that, in fairness to everyone here. And I will of course ask the same thing of the other participants. Thanks.

MR. VALDRON: All right. I'm going to move onto wildlife.

So I listened earlier to the cross-examination of Mr. Beddome with respect to

deer and moose, and I found that quite interesting. One way that impacts can occur is in creating new pathways for disease and parasites. And you know, this can happen a number of ways. Disturbed animals will avoid disturbance when moving into new regions, or will find new opportunities and follow those new opportunities. Development can make it easier. And so there are introductions. I believe I have even heard this as one of those consequences of global warming, the introduction of new parasites or new insect species into new areas. And we have certainly heard about brain worm devastating the moose population. So I guess here's a question.

Was this issue of parasites and diseases examined at all by Hydro? Just to give you the specific example, would it make brain worm in moose issues better or worse? Has there been any evaluation of possible movement of disease and parasites in animal population?

DR. GAHBAUER: That's certainly outside the scope of this project.

MR. VALDRON: Well, it's wildlife.

DR. GAHBAUER: It's wildlife, but disease transmission in wildlife has nothing to do

with the transmission line.

MR. VALDRON: Well, certainly not that they are getting it from licking a transmission pole, no. But my point is that if you're opening up a right-of-way that may change the dynamics of the landscape, you may well be opening up lines of communication, which creates or allows for disease or parasites to move more freely, just as the animals are moving in new ways.

DR. GAHBAUER: But as discussed before, there's no limitation on landscape for movement of the deer or moose, they are moving wildly. And while they move the transmission line right-of-way, it's not suddenly facilitating new movements that aren't currently possible.

MR. VALDRON: Well, in a sense, yes, I would argue, because there's a pathway that didn't exist before.

DR. GAHBAUER: Only in a -- let me rephrase that. The deer and moose make their own pathways all the time. It's irrelevant to them whether there's a right-of-way there or not, they'll move through, they do move through. And it's not that they are suddenly having access to new areas that they don't have access to

currently.

MR. VALDRON: So, are you saying that the right-of-way would not affect deer or moose movement at all?

DR. GAHBAUER: It certainly won't change the way in which they can get from point A to B, or affect disease transmission, as you are suggesting.

MR. VALDRON: No, no, that's not what I asked. I asked, are you saying that it won't affect their movement at all?

DR. GAHBAUER: No, I'm not saying it won't affect them at all. Anything can affect something to some degree. And yes, they will perhaps change their use slightly as they go into a right-of-way.

MR. VALDRON: So you're saying there is an effect but it's not meaningful?

DR. GAHBAUER: I can agree to that, yes.

MR. VALDRON: Okay.

I believe, as I was reading the wildlife chapter, there was some discussion of increased predator mobility. Do you recall that?

DR. GAHBAUER: Yes, we did comment on

that.

MR. VALDRON: Okay. Why predator mobility specifically? Wouldn't this result in increased mobility for all species? Wouldn't it potentially change species mobility?

DR. GAHBAUER: Well, again, it depends how mobile the species is in the first place. So for a bird, whether there is a right-of-way or not, it's easy enough to fly through an area. For moose and deer that go through all sorts of vegetation, it's not a big deal. But for something like a wolf, for example, that can be a little bit more, can have its movements a little bit more restricted by dense vegetation, having an open area may make it a little bit easier for them to move.

MR. VALDRON: Okay. And wouldn't that apply as well to non-predators like deer?

DR. GAHBAUER: It can. But, again, if you look at the landscape, there are deer trails through all sorts of vegetation. So they are not limited to the same degree that some others are.

MR. VALDRON: Okay.

And with respect to, and just kind of getting back to the mingling of moose and deer,

like I have had your opinion, are there any studies with respect to contact between moose and deer? Is there any literature that you are relying on, or is this basically just your opinion as I believe a Masters?

DR. GAHBAUER: Ph.D.

MR. VALDRON: Ph.D. sorry, I didn't mean to be derogatory at all. I am just vague sometimes.

Are you relying on literature or is this just your professional opinion?

DR. GAHBAUER: There is literature about transmission of disease between deer and moose.

MR. VALDRON: Okay. And contact, and where these contacts occur?

DR. GAHBAUER: Presumably there is. It's certainly well established that deer and moose are in the same habitat through much of their range.

MR. VALDRON: Okay. Is there any literature on the impacts of Hydro projects on -- or the impacts of right-of-ways, or other manmade channels, on contact between deer and moose?

DR. GAHBAUER: In terms of contact, I

have not come across anything to that effect, no.

MR. VALDRON: Okay.

Now, it looked like you were trying to have areas for each species. Were there any studies as to the extent to which species were interdependent, which species were affected due to loss of habitat or impacts of the right-of-way, and which interdependent species were further affected?

DR. GAHBAUER: That's a bit vague. Can you direct me to what you are referencing?

MR. VALDRON: You know what, I'll move on past that question. I'll give you an easy one.

Does Manitoba Hydro consider that there is enough protected land in the region and area affected by the MMTP to sustain all of the current populations of fish and wildlife and vegetation?

DR. GAHBAUER: It's more of a policy question for the province, I would say, in terms of sustainability of populations. I would just refer to the conclusions of our assessment that we don't believe there is a significant effect on wildlife.

MR. VALDRON: Okay. All right.

With respect to birds, I'm jumping around a little bit here -- I do have a question or two about bird diverters, in terms of preserving birds. Are bird diverters going to be used throughout the length or just on specific sections of line?

DR. GAHBAUER: It will be a targeted use at locations where there's an elevated risk of mortality.

MR. VALDRON: How do you determine that? Like do you go underneath and look for dead birds, or are there just specific sites that they are prone to? How is that determined?

DR. GAHBAUER: There are specific sites. As I mentioned in the presentation yesterday, the collision risk is chiefly for large water birds. And so by looking at the landscape where a lot of the route passes through forest, over dry agricultural areas, there's really minimal risk there, just because of the volume of bird traffic and the nature of the species there are both small and at low risk of collision. So the first step is to look at those areas such as the river crossings and areas near wetlands, and assume that those are the higher risk and begin

with that. And as part of the monitoring plan that will be presented later, there will be some more detail there in terms of adaptive management as required.

MR. VALDRON: Well, thank you. That was a good answer and I appreciate it.

Bears, I read your chapter, or I read the section on bears with quite a bit of interest. I met a bear myself once upon a time up in The Pas. Turned a corner, there he was 10 feet away. Interesting experience. But it kind of illustrates the situation. Bears have fairly complex lifestyles, are opportunists, they can travel. And what I found when I met one was seasonal shortages could change behaviour.

So was there any information on the impact of the project on bear behaviour? Because I accept that it's not going to change bear populations, but it may change bear conduct. Was there any discussion or examination of that issue?

DR. GAHBAUER: So we did consider bears. Again, bears are one of the species that were brought forth as being of interest. And bears, again, they're quite flexible in their habitat usage. We don't expect, based on our

understanding of bear ecology and literature, that the existence of the right-of-way is going to affect them. Perhaps, again, they may use the right-of-way to some degree, they may forage on some of the plants in there, but the primary potential for any disturbance will be during the brief period that construction is in a given portion of the line.

MR. VALDRON: Would they be more prone to foraging in and around the right-of-way?

DR. GAHBAUER: They may, depending on the vegetation growth in there, they may find some suitable forage in there.

MR. VALDRON: All right.

Would the right-of-way make them more mobile in terms of their territory, or affect how they configure their territory? Because sometimes this can take them quite far afield.

DR. GAHBAUER: Well, black bears have large territories as it is. And given the nature of the part of the province we're looking at and the number of existing travel routes, I don't imagine that this is going to be a really substantial change in terms of the movements of bears and the size of the territories that they

hold.

MR. VALDRON: All right. Thank you.

Now, moving quickly onto elk, I believe box 27 said the route avoids the elk area in Manitoba. And I was wondering how that was determined? Because when I looked at the chapter, and section 9.1.2.1, all it had to say about elk was that there was an occasional aerial survey done by MCE.

DR. GAHBAUER: Yes, right. So the Province does do periodic surveys.

MR. VALDRON: Aerial surveys.

DR. GAHBAUER: Aerial surveys, yes. And it's understood that the range of the elk is a dynamic thing, they are ranging animals. This population, in particular, moves back and forth across the Manitoba-Minnesota border. And so it's dynamic within a given year and across years as conditions vary a little bit. But fairly consistently, the centre of that range has been around Vita.

MR. VALDRON: Okay. And how often are these surveys done?

DR. GAHBAUER: I believe the two most recent surveys were in 2011 and 2014. We

supplemented that through aerial surveys of our own over the last four years now, and also some terrestrial based surveys.

MR. VALDRON: Okay. So Manitoba Hydro has done aerial based surveys of the elk herd?

DR. GAHBAUER: They were primarily aerial surveys of a more general sense for ungulates and large mammals, but certainly elk were one of the key targets that were being looked for.

MR. VALDRON: Okay. What's the territorial size range of the herd? How much territory do they cover?

DR. GAHBAUER: I can't give you, you know, an area in hectares or square kilometres offhand. But again, you know, they are from Vita and surroundings down well into the bogs of Northern Minnesota. So it's a fair distance that they range.

MR. VALDRON: Okay. And do we know the rutting and calving areas for elk and whether any of these areas are affected?

DR. GAHBAUER: We don't believe it will be affected, given that we did do some of our surveys during the rutting season specifically.

And some of our survey points were outside the LAA specifically to detect other activity. The only observations we had were outside the LAA. It seems, based on all of the data available, that they are primarily west and south of the route. And while there may be occasional movements that come a little bit closer to it, there's no evidence at this time to show that they are using the PDA or LAA with any regularity.

MR. VALDRON: All right. And the information on the elk herd is pretty current. Did you look at or have any information on the status of the elk herd or the status of elk in the region 40 to 50 years ago?

DR. GAHBAUER: 40 to 50 years ago they were not in the region. This herd established in the last 30 years or so.

MR. VALDRON: All right. I asked that because you said yourself that populations of animals can shift dramatically and we have seen the collapse of moose. So I was wondering about the long-term prognosis.

All right. Here's a question about EMF. I'm actually not going to get into EMF -- well, you know what, in a very limited sense, is

there any indication of electromagnetic frequencies of the towers affecting waterfowl or geese? I understand they may navigate in part by following magnetic lines.

DR. GAHBAUER: Yes, birds may navigate to some degree with that. But I'm not aware of any evidence regarding EMF. I think probably because, if you recall the presentation from Dr. Bailey the other day, there's a very limited distance from the line that EMF has any presence, and the majority of migrating birds are much farther above ground than the line is from the ground. And so the probability of any EMF reaching them that would have any effect has got to be minimal.

MR. VALDRON: Okay. Now that's a good answer and I certainly appreciate it.

If you can just confirm for me that there is no literature and no studies on this subject?

DR. GAHBAUER: I can't confirm that there is no literature on the subject, but of all literature I have reviewed, I have not come across that. And it's likely simply because there would be no value in investigating a null result.

MR. VALDRON: Okay. So no one's looked into it. And I'm not parsing you there, I'm just nailing down a few things.

Now, what about the noise from the towers? Is there any likely effect on wildlife from the noise? Because I've heard it's about 22 decibels.

DR. GAHBAUER: Well --

MR. VALDRON: I certainly heard from some of the humans that they don't want to be around because of the noise, but does it affect wildlife?

DR. GAHBAUER: Again, there doesn't seem to be any evidence specifically saying so. I can believe that under certain circumstances, when the noise is a little bit elevated, that there may be some notice taken of that by wildlife. But given our studies of the existing transmission lines, M602F, and other research out there, there seems to be ample use of transmission line right-of-ways by wildlife, suggesting that it's not something that's a clear deterrent.

MR. VALDRON: So there is literature on this subject?

DR. GAHBAUER: There's literature on

the use of wildlife -- or the use by wildlife of transmission line corridors. The degree to which sound is implicated is generally minor, because I can't think of a particular study that assesses that in any detail.

MR. VALDRON: Thank you. I do appreciate that answer.

All right. Now, moving onto vegetation. I did touch on this yesterday, but I do want to just touch on it lightly here before moving on again.

With respect to the right-of-way area, how many hectares or acres of right-of-way, or how many -- well, just how many hectares or acres in the right-of-way in the construction site are at risk of being impacted by soil compaction or rutting? I know the preference is to do this construction during December and January, and I certainly appreciate that, and try and avoid this with winter. But you've also said that construction will be going on basically throughout the year. So there is some level of risk. How many acres are at risk?

MS. COUGHLIN: I guess the area of the right-of-way.

MR. VALDRON: Okay. If there is soil compaction or rutting in the area of the right-of-way, what's the remedies there? Is there a reseeding? Does the land get tilled until it's non compacted or the ruts are gone? How does recovery and regeneration work if the soil is compacted?

MR. DE CARLO: There are various, like you say, tilling, de-compacting the soils, giving it time to rebound and recover.

MR. VALDRON: Okay. And that's part of Hydro's mitigation planning? That will be done in the normal course?

MR. DE CARLO: If memory serves me correct, yes, it is part of their process.

MR. VALDRON: Okay.

Box 5 of the vegetation section, all right. I assume that most of the studies that were taken were literature reviews and not fieldwork; is that correct?

MR. DE CARLO: There was a mix of both literature review and fieldwork, on wetlands and rare plants.

MR. VALDRON: All right. Who performed the fieldwork.

MR. DE CARLO: Fieldwork was performed by a team of botanists.

MR. VALDRON: Okay. What's the balance in terms of the work that was done? How much, you know, in terms of what we have in the final product, was it mostly literature and some fieldwork, 50/50, 90/10?

MR. DE CARLO: I can't give an exact breakdown on the proportions. As mentioned in the presentation, surveys were conducted in various locations. I believe that was shown on slide 4 of the second screen of the presentation.

MR. VALDRON: Okay. I'm just curious, how much money was spent on fieldwork for the MMTP? Can you give me an estimate?

MS. COUGHLIN: I don't know. I'm not sure.

MR. VALDRON: All right. I'm told that fieldwork for Bipole III, on the east side of Manitoba, done in the early 1990s was over 20 million. Was it anywhere near that amount?

MS. COUGHLIN: I don't know.

MR. VALDRON: Fair answer.

All right. Now, moving onto invasive species, plant invasive species. As I understood

reading that chapter, the description of invasive species were basically completely foreign species, species completely outside the area. Is that correct?

MR. DE CARLO: That's not entirely correct.

MR. VALDRON: Oh, okay. Then clarify it for me.

MR. DE CARLO: In Manitoba, weeds are listed under the Provincial Weed Act, and that Provincial Weed Act does include native species.

MR. VALDRON: So native species can be invasive species?

MR. DE CARLO: Under the criteria of the Provincial Weed Act, yes.

MR. VALDRON: You looked like you were about to say something else. Was that your complete answer?

MR. DE CARLO: That's my complete answer, yes.

MR. VALDRON: Okay. Because, I mean, if you had something else, don't let me stop you.

MR. DE CARLO: No, that's fine.

MR. VALDRON: All right.

So with respect to invasive species, I

guess the concern of my clients is -- and we respect that Hydro has obviously thought about and taken some action with respect to bio-security, but we're concerned that the right-of-way itself could potentially open a pathway for invasive species. Can you comment on that?

MR. DE CARLO: That is possible. Right-of-ways can be pathways, existing disturbances including roads can be pathways for movement of invasive species.

MR. VALDRON: And how do we manage that risk?

MR. DE CARLO: We're managing it with mitigation. As identified in the slide 21 of my presentation, it will be managed first by further surveys to identify where weeds, invasive species will, or are occurring along the right-of-way. And then also surveys at access points to identify areas that may be at risk of spreading weeds into new areas. And then also having equipment arrive clean and free of debris before it enters the right-of-way.

MR. VALDRON: Um-hum. And of particular interest to my clients obviously is the potential threat of invasive species to their

traditional medicinal and gathered plants. How significant is that risk?

MR. DE CARLO: One moment while I find the actual determination that we came to in the EIS.

So the magnitude of potential introduction, spread of invasive species was determined to be low in the EIS.

MR. VALDRON: Okay.

Now, moving right along, in terms of fragmentation, I know I've touched on this with wildlife but I'm going to touch on it with vegetation. One of the things I read, I think this is box 14, but it's also in your study, is that only say about 20 out of roughly 200 patches of larger than 200 hectares was affected. And this was considered small. That's 10 per cent. Is that small?

MR. DE CARLO: Well, again, I would go back to the definitions used in the EIS for magnitude. And magnitude for low was defined that there is no loss within the local assessment area. So it doesn't deal specifically with percentage changes.

MR. VALDRON: Okay. How was

200 hectares identified? Where did that number come from?

MR. DE CARLO: That number comes from a publication, How Much Habitat is Enough, that was produced by Environment Canada.

MR. VALDRON: Okay. That's the title of it, How Much Habitat is Enough?

MR. DE CARLO: Correct.

MR. VALDRON: Okay. And do they identify other habitat volumes or was 200 hectares their baseline?

MR. DE CARLO: So, the basis of the report is a literature review of studies conducted for wildlife and other species, and their sensitivity to different patch sizes. And through that literature search they identified, or literature review, they identified that 200 hectares is important for maintaining sensitive bird species. And as mentioned in the presentation, bird species are used because there's more known on wildlife than plants, and from what is known, they are more sensitive than plants. So we wanted to take a conservative approach and to use what was more sensitive.

MR. VALDRON: Okay. So it was

actually driven by bird species?

MR. DE CARLO: Yes, the determination that 200 hectares was important was driven by bird species.

MR. VALDRON: Okay. With respect to traditional foods, traditional harvest plants, medicinal plants, I'm sure there's an acronym but for the life of me I can't think of it. I believe that the First Nations identified over 300 medicinal or locally used, traditionally used species. But I believe that Manitoba Hydro only identified 39.

MR. DE CARLO: No, that's not correct. So we used the information that was provided in the ATK studies, which identified that there were more than 300 species considered as traditional use plant species in the regional assessment area. But from our field surveys, we only observed 39 locations with traditional use species.

MR. VALDRON: Oh, okay, so that's where that comes from. All right.

THE CHAIRMAN: This is Serge Scrafield, Chair. I just want to let everyone know that it's 12:15, so we've got about another 15 minutes.

MR. VALDRON: I'm actually taking a moment of silence to see which questions I can edit out.

THE CHAIRMAN: Thank you.

MR. VALDRON: Now, getting back to invasive species, and this is hopefully just a very short one, you indicated that one of your lines of defence against potential invasive species entering or infesting the right-of-way would be herbicides. Is that correct?

MR. DE CARLO: That is correct.

MR. VALDRON: And under what circumstance would herbicides be used?

MR. DE CARLO: Herbicides would typically be used for species that had been demonstrated to have a known economic or environmental significant cost. They are aggressive, spread rapidly and quickly, and if allowed to establish are difficult to control.

MR. VALDRON: Okay. And will there be notification?

MR. DE CARLO: I believe, yes, there will be notification and communication.

MR. VALDRON: Okay. And obviously if you are attempting to stop an aggressive species,

then that would be the priority, and you're probably giving second place to native species which may be used?

MR. DE CARLO: It would depend on the individual species, how aggressive it is and what is the cost, and the conditions where the plant occurs.

MR. VALDRON: Okay. And how would they be detected? Just in occasional surveys?

MR. DE CARLO: So there will be further surveys conducted prior to construction, and then there will be environmental monitors on site during construction as well.

MR. VALDRON: All right. Thank you very much.

Now, onto fish, and I don't believe I have very much on fish, thank God. I know you're looking a little bit green around the gills. Oh, come on, that wasn't even funny.

MS. COUGHLIN: That is correct.

MR. VALDRON: I'll have to walk straight lines around you. Okay.

Onto business with the 10 minutes that I have left. Okay. Let's go to Slide 9. With respect to fish and fish species, did any of the

information on fish species or fish habitat come from First Nations?

MR. BLOCK: Yes, it did.

MR. VALDRON: Okay. And what exactly was, in a very, very brief nutshell, what were the preferred fish species that First Nations talked about, and what was the context? Like are First Nations catching a lot of fish in these areas? Have they traditionally caught fish?

MR. BLOCK: We did have input from a few of the TK studies, as well as some of the engagement activities. And there were several species listed, I think more common sport fish, pike, walleye, that sort of thing, and there was a little bit of information on where those activities took place.

MR. VALDRON: All right. And were any of these fish customarily fished for food?

MR. BLOCK: Yes.

MR. VALDRON: Okay. Basically the four species that you identified on the table?

MR. BLOCK: I think one of those pictures was of a brook stickleback, which I don't think too many people would eat, but it's possible.

MR. VALDRON: Never had it.

All right. I think I saw some conclusion about water quality on the slides, but I didn't see any discussion about water quality. How did you determine water quality issues?

MR. BLOCK: Existing water quality or potential water quality issues?

MR. VALDRON: Well, actually both. How did you determine existing water quality?

MR. BLOCK: There is information on existing water quality. The province does do water quality sampling. So we used that information as well as limited water quality sampling during the field surveys.

MR. VALDRON: Okay.

Potential or prospective water quality or impacts on water quality, how was that assessed?

MR. BLOCK: That was assessed based on the pathway of effects models created by Fisheries and Oceans Canada. They determined that vegetation clearing does have the potential to affect water quality. And based on the well-established mitigation measures that we use on the project, it was determined that there would

be no effect on, no measurable effect on water quality.

MR. VALDRON: Okay. Thank you very much. Not to give you a hard time, but I'm having a little trouble hearing. I'm hearing you fine, but you may want to speak into the mic a little bit more.

MR. BLOCK: Okay.

MR. VALDRON: That's much better actually.

Just give me a moment. I'm going to try and boil it down to one or two last questions.

All right. You have identified 14 quality riparian areas where there will be an impact; correct?

MR. BLOCK: There are 14 stream crossings that have forested areas.

MR. VALDRON: And so the intention is to basically clear the trees away from these areas?

MR. BLOCK: The trees that interfere with operation of the line will be selectively cleared, correct.

MR. VALDRON: Okay. Can you explain to me how the clearing of these trees might affect

the waters and affect the fish populations in those areas?

MR. BLOCK: So clearing vegetation in general could have an impact on shading, which has a potential impact on water temperature. Clearing vegetation can increase erosion, which has the potential to add sediment to the water. There's also various inputs from vegetation such as leaf litter and/or insects, stuff that use the vegetation has a potential to end up in the water, so there could be changes in nutrient input. There's probably a few more that I'm not remembering but there are various -- riparian areas are an important part of the aquatic ecosystem.

MR. VALDRON: Okay. And so there is some potential. So what's the plan to deal with these impacts?

MR. BLOCK: The plan is the riparian management zone, by selectively clearing just the large trees, they meet -- the majority of habitat quality is maintained.

MR. VALDRON: Okay. And that's a viable plan for basically the lifetime of the RoW?

MR. BLOCK: Sorry, can you say that

again?

MR. VALDRON: That's a viable plan for the lifetime of the RoW, right-of-way?

MR. BLOCK: The lifetime of the right-of-way, the lifetime of the project?

MR. VALDRON: As long as you've got a right-of-way there.

MR. BLOCK: Right. So those trees will -- be, through maintenance any new trees will be removed as well, if that's what I'm getting from the question.

MR. VALDRON: Okay. And I went blank, but can you tell me whether or not herbicides will be used on those trees to clear them or was it going to be cleared manually?

MR. BLOCK: Those would be not manually cleared, but herbicides would not be used to remove those trees, by machine, or by hand, by chain-saw.

MR. VALDRON: All right.

Now, one final question, it's a general question and I'm hoping it can be answered quickly. But we've heard a lot about how much Hydro has learned from past experiences and past projects, and I certainly think that's a wonderful

thing. But as I understand, you know, Bipole and Wuskwatim and Keeyask, some of these projects are either not built yet or have not been operating for that long, and so there isn't a lot of long term experience in terms of dealing with the effects. Would that be correct?

MS. COUGHLIN: Some transmission lines are quite old in the Province, so we have a broad range of experience.

MR. VALDRON: Okay.

I haven't heard a lot of talk in terms of discussion or learnings from previous transmission lines. Were the assessments of previous transmission lines feeding into this project as well?

MS. COUGHLIN: Some of the learnings are shared from studies taking place on M620F. It's a 500 kV line that's located in fairly close proximity to where the FPR would for MMTP. It's a lot of acronyms. But there is a very similarly sized line located in close proximity to where MMTP may go, so that was looked at.

MR. VALDRON: Okay. When was that line?

MS. COUGHLIN: It was '79-ish.

MR. VALDRON: Okay.

Has Hydro looked at the experience of transmission line developments in adjacent provinces or states in recent years?

MS. COUGHLIN: It depends on the topic. So our reference sections draw upon current literature from peer-reviewed journals that can span all sorts of jurisdictions.

MR. VALDRON: Okay. Well, I have given up quite a few questions, but I believe it's 12:28, so I will close now and stay in the Commissioner's good graces.

THE CHAIRMAN: Thank you very much.

Any announcements or filings or anything before we break? All right. So we will break and be back here at 1:30, thank you.

(Proceedings recessed at 12:29 p.m.)

THE CHAIRMAN: All right. Welcome back, everyone, and we are going to resume the questioning in to the biophysical panel, and we will continue with the Consumers' Association of Canada, represented by Ms. Pastora Sala. And just before we start, are there any housekeeping matters that we need to deal with?

No?

Okay. All yours.

MS. PASTORA SALA: Thank you, Mr. Chair. Good afternoon, members of the panel, and good afternoon, members of the biophysical panel as well.

My questions this afternoon will primarily be for Mr. David Block; however, I do have a couple of questions for Ms. Coughlin before getting to Mr. Block.

So, Ms. Coughlin, at page 9 of the introductory PowerPoint, you made reference to everything being connected, as well as the value of fish and wildlife habitat, in speaking about some things that you heard during the key engagement feedback. Correct?

MS. COUGHLIN: Correct.

MS. PASTORA SALA: And later in your presentation you referred to Manitoba Hydro's recognition of the fundamental role of fish, and its economic importance. Correct?

MS. COUGHLIN: Yes. That's why it was selected as a VC.

MS. PASTORA SALA: In addition to the information you provided relating to the key

engagement feedback in the First Nations and Metis engagement process, would Manitoba Hydro have also heard that all living beings are sacred and have a spirit?

MS. COUGHLIN: I think, along those lines, in different words, yes.

MS. PASTORA SALA: And that all living beings are relatives?

MS. COUGHLIN: Yes.

MS. PASTORA SALA: And that species such as fish are medicine and sustenance?

MS. COUGHLIN: Yes.

MS. PASTORA SALA: And you would agree that these understandings form part of indigenous world views and indigenous laws?

MS. COUGHLIN: Yes.

MS. PASTORA SALA: You will recall, Ms. Coughlin that when we last spoke, I asked you to point me to an express written policy or practice requiring Manitoba Hydro to take into account indigenous world views and legal orders?

MS. COUGHLIN: Yes, I believe we had it as an undertaking.

MS. PASTORA SALA: And you will recall that you answered to my question, and you pointed

me to the Cultural Heritage and Resource Protection Plan. Correct?

MS. COUGHLIN: Correct.

MS. PASTORA SALA: And since we last spoke, Manitoba Hydro has now made this plan publicly available on your website, so I would like to thank you for that.

Earlier, in a response to Mr. Beddome's question, Dr. Gabhauer indicated that he was not sure what Mr. Beddome meant by "indigenous world views". Correct?

MS. COUGHLIN: I think that might be taken out of context.

MS. PASTORA SALA: Dr. Gabhauer, was that not what you indicated?.

MR. GAHBAUER: It is what I said, but I didn't mean to state that I didn't understand "indigenous world views"; it was the context in which he stated it that I required clarification.

MS. PASTORA SALA: And just a few moments ago, we received a response to Undertaking Number 5, and the response refers to an article in Energy in which Mr. Kelvin Shepherd, president and CEO of Manitoba Hydro, identifies "the respect and support for indigenous peoples in all aspects of

our business as one of the four priority areas." Is that correct?

MS. COUGHLIN: I believe that's correct. I don't have what you have in front of you, but it is one of our priorities, yes.

MS. PASTORA SALA: You have not seen the response to the undertaking?

MS. COUGHLIN: I don't have it in front of me. Sorry.

MS. PASTORA SALA: Would you like me to share a copy of the response to the undertaking with you?

MS. COUGHLIN: Yeah, that would be great.

MS. PASTORA SALA: Do you see what I'm referring to, Ms. Coughlin?

MS. COUGHLIN: Yes, I do.

MS. PASTORA SALA: So the undertaking refers to the Cultural and Heritage Resources Protection Plan as an express written policy of practice requiring Manitoba Hydro to take into account indigenous world views. Do you see that?

MS. COUGHLIN: I do.

MS. PASTORA SALA: I'm going to take you to page 1-3 of the Cultural and Heritage

Resources Protection Plan.

MS. COUGHLIN: Okay. I don't have it in front of me, but please go ahead and read, and I will follow along.

MS. PASTORA SALA: For the purpose of the panel, I did share the list of resources prior to my questioning this morning, so that the Hydro would be prepared.

MS. COUGHLIN: Did you share that here?

MS. PASTORA SALA: Yes.

MS. MAYOR: Yes, we provided it to the back row. I'm not sure why they are gathered back there. We did provide it to them to gather everything.

MS. PASTORA SALA: I will wait.

THE CHAIRMAN: This is Serge Scrafield, the Chair.

Is it possible -- if I overheard correctly, you are now going to get a copy; so is it possible to move on to something and come back to that? Or is that going to interrupt the line of ... ?

MS. PASTORA SALA: I would like to address this issue right away, but I can read it

for Ms. Coughlin, maybe, if that's okay.

MS. COUGHLIN: Sure, yeah.

MS. PASTORA SALA: Okay.

On page 1-3, the goal of the plan you referred me to is stated. And it says: "The goal is to describe key actions in the event of discovery of cultural or heritage resources or human remains."

Subject to check, do you believe that's what it says?

MS. COUGHLIN: I will trust what you are reading.

MS. PASTORA SALA: I am wondering, now having had the opportunity to review the plan, I'm wondering if you could please provide me a specific reference in the document which explicitly identifies the overall need to respect indigenous world views in the MMTP.

MS. COUGHLIN: I think what I could do is I could refer to the general sequence of events. Because there might be uniqueness to instances and circumstances that we come across, we want to ensure that we have enough freedom to talk to different groups about what we might do collaboratively. So I don't think we've outlined

every instance of what might happen, but we've outlined a general sequence of events when situations are arrived upon.

MS. PASTORA SALA: Sorry, Ms. Coughlin, I'm not asking you to identify your plan with respect to the discovery of cultural or heritage resources or human remains; I'm just asking you to identify in the document a section in the report which identifies the need to respect indigenous world views within the MMTP, given this is a document that you referred to me the other day.

MS. COUGHLIN: Okay. So the environmental assessment itself outlines the principles, and one of those key principles is that:

"The following principles guided Manitoba Hydro's approach to First Nation and Metis engagement for the project, and that includes the diversity of First Nation and Metis cultures and world views should be understood and appreciated. Manitoba Hydro should work with First Nations and Metis to better understand perspectives and determine mutual approaches to address concerns and build relationships."

I could continue, if you like.

MS. PASTORA SALA: I wonder if you could explain to me what you think that means.

MS. COUGHLIN: I think it means we have to be respectful, and we have to ask questions when we don't know the answers. I think it means that we have to be open-minded, and we have to listen.

MS. PASTORA SALA: And just so I'm clear, what you've just indicated is not explicitly stated anywhere; that's just your belief. Correct?

MS. COUGHLIN: That's correct.

MS. PASTORA SALA: And so I'm wondering, just to get a little bit more specific, if you could give me a specific example of how the respect for indigenous world views and legal orders was considered in the monitoring plan for fish and fish habitat.

MS. COUGHLIN: A large reason why fish and fish habitat was included as part of the assessment is because of some of the concerns that Peguis First Nation shared. When we first went to the community, they talked to us about the importance of water, and the connectivity of

water. And they talked about a women's group that had discussed water.

And so we recognized that water was important, and fish were important. And that's discussed and described throughout the fish and fish habitat chapter. Yeah.

MS. PASTORA SALA: You would agree that there is no express value statement within the EIS or the Cultural and Heritage Resources Protection Plan which identifies the need to respect for indigenous world views and legal orders?

MS. COUGHLIN: Okay, so -- can I read the third paragraph under "Project Description and Setting":

"The area is also traditional territory of First Nation and Metis peoples. Contributions from First Nations and Metis traditional knowledge and land use and occupancy study have identified areas along the right-of-way of cultural and heritage importance that will be incorporated into the monitoring program. As such, heritage resource monitoring will

include collaboration with interested appropriate communities in conducting ground-truthing investigations or mitigation of known sites."

And I can add to that we are going to be developing -- or we hope to develop a community monitoring program with those interested. And should concerns arise around fish or water health, that would be something we would contemplate including in the monitoring program.

MS. PASTORA SALA: And you would agree, Ms. Coughlin, that in what you just read, there is no express statement which identifies the need to respect for indigenous world views and legal orders?

MS. COUGHLIN: The document that we're pulling from is a draft document. So we could add that, if that's something the CAC is requesting that we include explicitly in those words.

MS. PASTORA SALA: The other thing I would like to come back to and ask you a question about is you indicated that you hope to develop a monitoring plan. A hope is not a guarantee. Correct?

MS. COUGHLIN: It's correct. We are

still not sure whether or not communities want to participate in such an endeavor.

MS. PASTORA SALA: Thank you, Ms. Coughlin. I'm now going to move to questions for Mr. Block.

Mr. Block, you are an environmental specialist in the Licensing and Environmental Assessment Department at Manitoba Hydro. Correct?

MR. BLOCK: Correct.

MS. PASTORA SALA: And you have worked as an aquatic biologist in previous positions, including for the Government of Manitoba and a variety of consulting companies?

MR. BLOCK: Correct.

MS. PASTORA SALA: And you completed your master's in science from the University of Manitoba, and I believe your thesis was on sturgeon? I'm not going to mention the entire name of your thesis.

MR. BLOCK: It was long, but that's correct.

MS. PASTORA SALA: Thank you.

Mr. Block, as indicated in the EIS and referred to earlier by Ms. Coughlin -- I'm specifically looking to page 8-1:

"Fish and fish habitat were selected by Manitoba as a VC because of its fundamental role in the functioning of natural ecosystems, with fish as key indicators of aquatic health, and its economic and recreational health importance to Canadians."

MR. BLOCK: That sounds correct.

MS. PASTORA SALA: And:

"Changes in the distribution of occurrence of fish or fish habitat may strongly affect ecosystems, functions, and environmental cycles."

MR. BLOCK: That also sounds correct.

MS. PASTORA SALA: And as with other VCs, fish and fish habitat was also part of the information discussed in the public engagement processes. Correct?

MR. BLOCK: Correct.

MS. PASTORA SALA: "Some of the issues identified in the ATK and land use studies relating to fish and fish habitat included, for example, fears relating to the contamination of fish with mercury." And that was by Roseau River Anishinabe First Nation, at pages 8-6.

"And a decrease in spawning over the last decade." And that was also by Roseau Anishinabe First Nation. Would you agree?

And just for your information, I'm reading directly from page 8-6.

MR. BLOCK: I see that. That is correct.

MS. PASTORA SALA: Recognizing the differences within the area, or areas, would you be aware that those same concerns were also heard by the Keeyask Cree Nations during the -- pardon me.

Recognizing the differences in the project areas, would you be aware that those same concerns were expressed by the Keeyask Cree Nations during the Keeyask hearing?

MR. BLOCK: I would.

MS. PASTORA SALA: Specifically, the Keeyask CEC report, as a response to those concerns, found that -- and I'm quoting: "Fears of possible contamination might discourage community members from consuming country foods, including those not affected by mercury."

That's at page 109 of the Keeyask report.

MR. BLOCK: Okay.

MS. PASTORA SALA: Would you be familiar with that?

MR. BLOCK: Not specifically. But I think that would make sense.

MS. PASTORA SALA: You would not be familiar with the CEC Keeyask report recommendations and comments relating to fish?

MR. BLOCK: I don't have it in front of me. I am familiar with it, but I can't guarantee that your quote is accurate. But I trust that it is.

MS. PASTORA SALA: Thank you.

MS. COUGHLIN: Mercury contamination in fish is associated with impoundments, so we are doing of course a transmission line with this project.

MS. PASTORA SALA: As I indicated in the quote, the quote referred to also perceptions and including those not affected by mercury, Ms. Coughlin.

Going back to Mr. Block, would it be correct, sir, to say that there are three endangered fish species which are present in the assessment area in the MMTP?

And what I'm going to do is I will just tell you the ones I'm speaking of, and maybe you can confirm: Bigmouth buffalo.

You are going to have to speak in the mic.

MR. BLOCK: Okay.

MS. PASTORA SALA: Lake sturgeon.

MR. BLOCK: Okay.

MS. PASTORA SALA: Mapleleaf mussels.

MR. BLOCK: Okay.

MS. PASTORA SALA: Just so I'm clear, sir, when you are saying "Okay", are you agreeing with me?

MR. BLOCK: I agree that the Committee on the Status of Endangered Wildlife in Canada has those listed as endangered, and that there is the potential that they are within the regional assessment area.

MS. PASTORA SALA: In fact, those three species that I mentioned, all three of them not only have been recognized as endangered, and of special concern by the Committee on Status of Endangered Wildlife in Canada, so COSEWIC, but also under the Species at Risk Act. Correct?

MR. BLOCK: What I have here is the

lake sturgeon has no status under SARA; the bigmouth buffalo is special concern; and the mapleleaf is endangered under the Species at Risk Act.

MS. PASTORA SALA: Okay, that's fair.

At page 8-15, Manitoba Hydro indicates that it considered the Practitioners Guide to the Risk Management Framework as an useful assessment tool. Correct?

MR. BLOCK: Correct.

MS. PASTORA SALA: I would like to take you to the excerpt of the Practitioners Guide that I have provided.

MR. BLOCK: I have that.

MS. PASTORA SALA: We are going to go to page 7, and at page 7 it states:

"One of the initial steps to be considered before the risk management framework can be applied is that there must be sufficient information to understand the nature of the development proposal in order to determine whether the habitat protection provisions of the Fisheries Act apply. Identification of

information gaps early in the design and planning stages helps to ensure appropriate studies area conducted that ultimately support a well-informed decision."

Do you see that, Mr. Block?

MR. BLOCK: I do.

MS. PASTORA SALA: And now if we go to pages 13 to 14 of the Practitioners Guide.

MR. BLOCK: Okay.

MS. PASTORA SALA: It refers to uncertainty, and the importance of using the precautionary principle in circumstances of uncertainty. Do you see that?

MR. BLOCK: I do.

MS. PASTORA SALA: And in the face of uncertainty, Manitoba Hydro has also indicated, on more than one occasion over the course of the last couple of days and weeks, that the precautionary principle was used and has been applied. Agreed?

MR. BLOCK: Agreed.

MS. PASTORA SALA: And yesterday, during the socioeconomic panel, we heard Dr. Leece say that in cases of uncertainty, the precautionary principle requires an overestimation

of risk. Would you agree with that statement, Mr. Block?

MR. BLOCK: I would.

MS. PASTORA SALA: Now let's go to page 18 of the report. At page 18, it states:

"Uncertainty with respect to sensitivity of fish and fish habitat is reduced through additional information."

Do you see that?

MR. BLOCK: Yes.

MS. PASTORA SALA: And would you agree that uncertainty with respect to sensitive fish and fish habitat can be reduced through additional information?

MR. BLOCK: Yes.

MS. PASTORA SALA: I would now like to take you back to the EIS for MMTP, at page 4 -- pardon me -- 8-14.

MR. BLOCK: Okay.

MS. PASTORA SALA: Manitoba Hydro states:

"Some uncertainties remain in this assessment as a result of the following."

I'm looking at the second bullet:

"Fish sampling was not conducted as part of the field assessment, so fish presence data was sourced from desktop historical data."

Do you see that?

MR. BLOCK: I do.

MS. PASTORA SALA: And so just to confirm, the field studies that are referred to in chapter 8, for example, at page 8-13, and then again at table 8-8, or the field surveys at page 9 of your PowerPoint, those all refer to field assessments of watercourses. Correct?

MR. BLOCK: Correct.

MS. PASTORA SALA: And the purpose of those studies were to -- and I'm quoting:

"Establish in water and riparian environment conditions, and to conduct water quality measures at each of those selected water crossings."

Correct?

MR. BLOCK: Correct.

MS. PASTORA SALA: And again, those field studies were not on fish or fish habitat specifically. Correct? They were on water

crossings, watercourse crossings.

MR. BLOCK: Riparian assessment and water quality is a direct sampling of fish habitat. So I would disagree.

MS. PASTORA SALA: But not of fish.

MR. BLOCK: No fish. Correct.

MS. PASTORA SALA: And would you agree, Mr. Block, that fish sampling generally has an important role, particularly in the face of uncertainty?

MR. BLOCK: That's a little too vague for me to agree with.

MS. PASTORA SALA: Okay. Would you be aware that for the Keeyask project, Manitoba Hydro conducted fish sampling?

MR. BLOCK: Keeyask generation, or Keeyask transmission?

MS. PASTORA SALA: Keeyask generation, sir.

MR. BLOCK: I would assume they would conduct fish sampling, yes.

MS. PASTORA SALA: Now turning to the topic of endangered fish species -- and I'm going to be focusing on mapleleaf mussels.

So in addition to be being recognized

as endangered by COSEWIC and protected under the Species at Risk Act, you are aware that mapleleaf mussels are also protected under the Endangered Species and Ecosystems Act?

MR. BLOCK: Yes.

MS. PASTORA SALA: And mapleleaf mussels are expected to occur within the regional assessment area, or RAA, of the MMTP in Assiniboine River, Red River, LaSalle River, Seine River, Cook, Devil's Creek, Rat River, and Roseau River?

That's directly from the EIS.

MR. BLOCK: Okay.

MS. PASTORA SALA: I would like to address your attention to CAC IR 026.

MR. BLOCK: I have it here.

MS. PASTORA SALA: The first line says:

"According to Hague (ph) 2012, mussels are keystone species and ecosystem engineers that have a large impact on other organisms, and they provide tangible benefits to humans as well. Mussels serve several important functions in aquatic ecosystems."

Do you see that, sir?

MR. BLOCK: I do.

MS. PASTORA SALA: Do you agree with the characterization of mapleleaf mussels in this statement?

MR. BLOCK: I do.

MS. PASTORA SALA: At page 8-48 of the EIS, it states:

"Habitat changes may have greater effects on endangered fish species because of specialized habitat or biological requirements for species that have narrow tolerance to habitat alterations."

Do you see that?

MR. BLOCK: I do.

MS. PASTORA SALA: Similarly, at page 8-63, it states:

"Changes in fish mortality or health might have a greater effect on SOCC than on common species, because those populations already approaching critical levels of sustainability as a result of threat to their environment."

Do you see that?

MR. BLOCK: Yes.

MS. PASTORA SALA: So some of the threats to mapleleaf mussels include, according to the EIS, habitat degradation and loss?

MR. BLOCK: Yes.

MS. PASTORA SALA: Invasion of exotic species, such as zebra mussels?

THE WITNESS: Yes.

MS. PASTORA SALA: Industrial and municipal pollution?

MR. BLOCK: Yes.

MS. PASTORA SALA: And although identification is identified in the EIS at page 8-64, a recovery strategy or action plan for mapleleaf mussels has not been identified by Manitoba Hydro. Correct?

MR. BLOCK: That's a specific reference to the Species at Risk Act, which requires the Federal Government to prepare recovery strategies for these species.

MS. PASTORA SALA: So the NEB IR 1.5 specifically states:

"Manitoba Hydro is not prepared or has not identified a recovery strategy or

action plan for mapleleaf mussels at this time."

MR. BLOCK: I think the previous answer still stands. It's not our responsibility, so we have not.

MS. PASTORA SALA: Right. And so at CAC IR 026, you indicated the same thing, and so that's still your position; thank you.

MR. BLOCK: That is correct.

MS. PASTORA SALA: So to reiterate, Manitoba Hydro's conclusions relating to fish and fish habitat is that there are no serious harm anticipated, and no residual effects. Agreed?

MR. BLOCK: Agreed.

MS. PASTORA SALA: And with respect to monitoring and followup activities for fish and fish habitat are described in Table 4-2 of page 17 of the updated environmental monitoring plan. Agreed?

MR. BLOCK: Yes.

MS. PASTORA SALA: Do you have that page in front of you?

MR. BLOCK: I do not.

MS. COUGHLIN: Do you want to just read it?

MS. PASTORA SALA: Sure. I was trying to avoid all this back-and-forth by giving you guys the references, but it didn't help. So, I'm sorry, I am going to read it.

So on page 17, there is a subheading, under "Fish and Fish Habitat", and -- okay. All right. So if you look on page 17, under the monitoring plans, it says "Fish and Fish Habitat" as the heading. Do you see that?

MR. BLOCK: Yes.

MS. PASTORA SALA: And then the subheading says "Watercourse Crossing". Correct?

MR. BLOCK: Correct.

MS. PASTORA SALA: And then the key monitoring activities, which are identified at 4-2, relate to stream crossing assessments. Correct?

MR. BLOCK: Correct.

MS. PASTORA SALA: Would it be accurate to say that there are no key monitoring activities in Table 4-2 other than stream crossing assessments, for postconstruction?

MR. BLOCK: Correct.

MS. PASTORA SALA: So there are no key monitoring activities specifically related to fish

mortality?

MR. BLOCK: Correct.

MS. PASTORA SALA: What about fish habitat?

MR. BLOCK: The stream crossing assessments are directed to monitor fish habitat, being the riparian area, which is an important aspect of fish habitat and the one place where the project interacts with fish habitat.

MS. PASTORA SALA: Are there any other key monitoring activities relating to fish or fish habitat that are not listed in Table 4-2 of the updated EPP?

MR. BLOCK: There are. This refers to -- this refers more to monitoring, which is done on an annual basis. There will also be the environmental inspections, which are done throughout construction, which monitor similar features but are done on a more regular basis, but monitor the same things, such as riparian buffers, and ensure that the mitigation methods are properly applied and are working effectively.

MS. PASTORA SALA: Right, sir. I'm referring to postconstruction monitoring. Are there any that are not identified in this table?

MR. BLOCK: Not that I'm familiar with.

MS. PASTORA SALA: So there are no specific monitoring activities relating to any of the endangered fish species?

THE WITNESS: Correct.

MS. PASTORA SALA: Bigmouth buffalo?

MR. BLOCK: Correct.

MS. PASTORA SALA: Lake sturgeon?

MR. BLOCK: Correct.

MS. PASTORA SALA: Mapleleaf mussel?

MR. BLOCK: Correct.

MS. PASTORA SALA: Those are my questions. Thank you.

THE CHAIRMAN: Thank you for those questions, and once again, for the answers.

Normally the Southeast Stakeholders would be up next; it is my understanding that you've switched with Dakota Plains Wahpeton. Is that accurate?

So I take it, Mr. Mills, you have switched positions, then, with the Southeast Stakeholders?

MR. MILLS: Yes, we have. That was blessed by your secretary before lunch.

THE CHAIRMAN: Yep. That's why I was just checking. Thank you.

MR. MILLS: Thank you.

So many questions, so little time.

Mr. Amundson?

MR. AMUNDSON: Amundson.

MR. MILLS: Amundson.

Sir, I'd like to refer to the Aboriginal traditional knowledge study that Golder Associates prepared for Dakota Plains for this project.

MR. AMUNDSON: Okay.

MR. MILLS: Do you have there?

I would just like to scroll through it; there are some points I would like to just confirm that you are in agreement with. If we could go to 1.0, introduction.

Golder concluded and stated that the project is located within the traditional lands of the Dakota Plains Wahpeton nation, and therefore is of interest and concern to the community.

Would you agree with that statement?

MR. AMUNDSON: Agreed.

MR. MILLS: Thank you.

Further down, on page 9, there is a

map that is embedded within that report. It is referred to as the -- reproduced from the British Parliamentary Select Committee Hearings of the Hudson's Bay Company of 1857, and it indicates and describes Dakota traditional territory.

Have you reviewed that map, sir?

MR. AMUNDSON: Yes, I have.

MR. MILLS: Do you have any questions or concerns with how it describes the Dakota traditional territory?

MR. AMUNDSON: No, I don't.

MR. MILLS: Thank you.

Page ten, the statement is made:

"In addition to oral history, archeological evidence indicates that the Dakota occupied a large region, including, amongst others, this area of eastern Manitoba prior to 1200 AD."

Would you agree with that statement? Or do you have any reason to dispute it?

MR. AMUNDSON: As an archeologist, we do study linking ethnicity with pre-contact archeological sites and artifacts, but there is strong evidence that we can do that, so I have no reason to dispute your statement.

MR. MILLS: Thank you.

If we go to page 17, under "Summary", the opening line reads:

"Dakota Plains Wahpeton Nation members have been practising TLU activities in the project area since Dakota people first occupied a large region prior to 1200 AD."

Do you have any reason to dispute that statement?

MR. AMUNDSON: No, I don't.

MR. MILLS: It goes on to say: Despite many changes described -- and I paraphrased there -- DPWN community members still practice hunting, fishing, plant harvesting, camping, and cultural activities.

Do you have any reason --

"Where fragments of forest and natural habitat remain."

Would you agree, or do you have any concern with that statement?

MR. AMUNDSON: I have no reason to disagree with that.

MR. MILLS: Golder also found that:

"Wildlife hunting, camping, and

medicinal plant and berry harvesting by DPWN members occurs today over a wide area, including an area around the community of Piney."

Do you have any reason to challenge or dispute that statement?

MR. AMUNDSON: Could you point out the place that you ... ?

MR. MILLS: I'm sorry, I'm moving too quickly. Under "Summary", it is the first half of the second-last paragraph.

MR. AMUNDSON: In Section 6, "Summary"?

MR. MILLS: Yes.

MS. COUGHLIN: The -- it starts with "There was no culturally important sites identified near the project." Is that --

MR. MILLS: I'm sorry. I apologize. Pardon me. The start of the second paragraph, under 6.0, "Summary":

"Wildlife hunting, camping, and traditional plant and berry harvesting by DPWN members occurs over a wide area, and also in an area around the community of Piney."

Did your research cause you to dispute that statement?

MR. AMUNDSON: There is no reason to dispute that statement. We accept the information that we receive from ATK studies as being accurate.

MR. MILLS: Thank you.

I'm sorry, I'm -- I've a great memory; it is just short. Nick --

MR. DE CARLO: Yes.

MR. MILLS: Nick, a couple of questions.

Dakota Plains is of mixed emotions regarding the routing, and we see issues -- we see several different arguments, and we would like to talk about some concerns, and maybe you could help us to better understand. We certainly appreciated your presentation.

Our research indicates that there have been at least three very significant forest fires in and around this region, primarily to the east of it. We understand that there was a significant forest fire in 1953 that in fact caused the founding of the Pineland Tree Nursery to assist in reforesting. We believe there was another

substantive fire in 2008, and we believe there was another substantive fire in 2011.

We look at forest fires, and we have overlapping concerns as to cause and effect and what the routing might be. In your review of the plant growth along this routing, approximately how much peat would be -- would be -- I apologize.

How much peat would be encountered?

MR. DE CARLO: Peat is encountered in wetlands, specifically peat-accumulating bogs and fens. I can go to a specific table in the EIS, if you would like, where we can look at the areas along the -- different study areas.

MR. MILLS: We go to the Natural Resources Canada, and we ask them about peat, and they give us some good writing on peatland fires -- which will dovetail into carbon emissions, we will talk about shortly -- and peat fire emissions and the risk of peat fires.

We also saw, in the technical advisory review -- and I'm not sure it was answered but -- or a thought or a comment expressed by one of the local RM managers that moving the right-of-way into the forested area to the east of the preferred route might create a fire buffer.

And in your experience, first of all, is the -- appreciating that there may be a slash-burning technique used through peatlands, would that be a concern to you, with regards to smoldering or simmering or adding risk to forest fire in the area?

MR. DE CARLO: Well, I would say the effectiveness of buffers is really tied to the different intensities of forest fire. And as we saw recently with Fort McMurray, for example, forest fires can jump buffers.

And I can't speak specifically to the monitoring plan for the burning practices that will be conducted, but I would assume they will be done in a safe manner and will be monitored.

MR. MILLS: We are fortunate we understand that for other reasons, the right-of-way will be substantive.

In your experience in forestry work, do you have any knowledge as to an appropriate width of a buffer in a forest to assist or prevent fire from jumping it?

MS. COUGHLIN: Sorry, I want to see how relevant this is to Nick's chapter. I'm just wondering if this is out of scope.

MR. MILLS: We think forest fire and vegetation are certainly linked. And we think forest fire in Canada today is of significant concern.

MS. COUGHLIN: Did you just want to maybe link it to your project concerns? Or -- I'm just struggling a little bit with ...

MR. MILLS: Well, let me ask the questions, and if they don't work, you can -- I'll move on.

So we have two concerns, Nick. One is with the amount of peat that will be encountered on the right-of-way, and with the slash-burning technique that appears as if it may be used. Is there any concern or risk that peatland fires might be -- might be of a significant -- might be something we need to be worried about?

MR. DE CARLO: Not with the proposed mitigation, including the timing of construction. As I had mentioned earlier, peat primarily occurs in wetland, and they are wet, for the most period. So you are not going to have a great likelihood of spreading fires there in, say, early spring, or particularly winter, when construction is planned in those areas.

MR. MILLS: I appreciate your comments. The opinion of Natural Resources Canada is that as warming temperatures will lead to more droughts, the risk of -- there is a serious risk that will leave peat more vulnerable to burning. That's just their comment.

MR. DE CARLO: And again, so we've taken into consideration changing scenarios with climate change, and burning would not be planned when these areas are in drought condition.

MR. MILLS: Okay. Thank you.

Nick, in your survey of the route, you went into quite some detail, and I certainly respected that. Did you attempt to quantify the amount of biomass that will need to be harvested on the 500-plus hectares of this route that we understand would need to be devegetated?

MR. DE CARLO: Not for the purposes of the vegetation and wildlands assessment, no.

MS. COUGHLIN: I believe we have an IR on that.

MR. MILLS: Maybe you could just email me that. Thank you.

So, Nick, you guys were boots on the ground; you reviewed this route and walked it, or

traveled through it?

MR. DE CARLO: I've been on site, but I did not conduct the field surveys personally.

MR. MILLS: Who did?

MR. DE CARLO: Others that -- in our vegetation group, like I indicated before, botanists.

MR. MILLS: Was it Stantec team, or Hydro team?

MR. DE CARLO: It was Stantec team.

MR. MILLS: Great. As an aside, there's rumours that the woods around Woodbridge are haunted, and I was wondering if your crew had stumbled upon the ghost lights of Woodbridge, but --

MR. DE CARLO: Not that I'm aware of.

MR. MILLS: They might have mentioned it.

We went down the path of herbicides and traditional plants and medicines on Bipole III, and I got quite the education. We learned that there were 28 -- in the C1 section of Bipole III, we were educated to 28 traditional harvest sources. And I was wondering, how many -- I believe your number was larger than that, was it

not?

MR. DE CARLO: So I didn't identify individual collection areas in my presentation. From the information received under direct -- self-directed studies, the majority of the regional assessment area was characterized as being used for traditional plant use collection.

MR. MILLS: I see. Of those traditional plant uses, are any of them, in your opinion, resilient to the herbicides that Manitoba Hydro uses?

MR. DE CARLO: Um --

MR. MILLS: Or would it be safe to say that the herbicides that Manitoba Hydro uses would, in all likelihood, negatively affect all 28?

MR. DE CARLO: So I would say that we took a precautionary approach, and anywhere that herbicides are planned to be used, or would be used, could cause an effect to native plants, including plants identified for traditional use.

MS. COUGHLIN: And I just would add to Nick's answer, where we indicated that if there are gathering areas that have been identified by different communities, we have created

environmentally sensitive site, and different measures could be applied in those areas.

MR. MILLS: Great. If Dakota Plains was to indicate to you that the entire route was environmentally sensitive to them, would that be sufficient to prevent herbicide use on the route?

MR. DE CARLO: No. As I indicated earlier, there are certain --

MR. MILLS: Come on.

MR. DE CARLO: -- certain circumstances where applying herbicides is the best approach, because if left unchecked, the outcome could be much worse than the negative effects from using herbicides.

MR. MILLS: Thank you. I am listening; I'm trying to --

MS. COUGHLIN: The IR I was referring to before is DPW IR 19.

MR. MILLS: Thank you.

David Block. We understand -- or please confirm for me, how many waterways are we crossing?

MR. BLOCK: Seventy-five.

MR. MILLS: Thank you.

We understood from construction

technique that something called an ice bridge is Manitoba Hydro's preferred method of crossing a waterway. They freeze it up and use it, literally, as a mini winter road. Is that your understanding?

MR. BLOCK: My understanding is that existing access is much preferred over any temporary or any access that we need to create ourselves. So I would disagree with that.

MR. MILLS: So no ice bridges will be employed on the route?

MR. BLOCK: I think the -- I'm not sure if the access management plan will be covered, but from my understanding, due to the availability of access, that we should not have to create ice bridges for construction.

MR. MILLS: Okay. Those are my questions for that.

I would like to speak to greenhouse gas. Who would like to answer these questions?

MS. COUGHLIN: Mike Shaw and I can answer those questions, depending on their nature.

MR. MILLS: Okay.

Mike?

MR. SHAW: Yes. Hello.

MR. MILLS: Okay, great. Good to meet you.

Mike, we've spent a lot of time reviewing the greenhouse gas life cycle assessment for this project, as prepared by the Pembina Institute. We have asked the Pembina Institute on four occasions directly, and Manitoba Hydro on at least three occasions, to provide us with the CVs of Binnu Jeyakumar and Ryan Kilpatrick, and they haven't been forthcoming. So you are here to answer questions on their behalf, I take it?

MR. SHAW: Yes, I am here on their behalf.

MR. MILLS: Okay.

We see from your CV you are a P.Eng registered in Manitoba?

MR. SHAW: Yes.

MR. MILLS: Are you a scientist?

MR. SHAW: I'm an applied scientist.

MR. MILLS: Okay. That's good.

Are you CSA certified to do greenhouse gas life cycle assessments?

MR. SHAW: There is no CSA certification for life cycle assessments.

MR. MILLS: I beg to differ.

MR. SHAW: Sorry, so there are CSA certifications for GHG inventory quantification --

MR. MILLS: Yes.

MR. SHAW: -- as well as GHG verifiers.

MR. MILLS: Yes.

MR. SHAW: But they're not life cycle assessment.

MR. MILLS: Okay. Are you either a quantifier or a verifier?

MR. SHAW: I am a quantifier, but I don't have CSA certification.

MR. MILLS: Okay. Binnu Jeyakumar and Ryan Kilpatrick, they are the authors of this report. Correct?

MR. SHAW: That's correct.

MR. MILLS: Have you ever met them?

MR. SHAW: I have not met them in person.

MR. MILLS: Okay. Do you know anything about them? We've spent a considerable amount of time trying to understand who wrote this report, so help me out. Do you know if either of them are CSA greenhouse gas quantifiers?

MR. SHAW: Do you mean if they have

the certification from CSA?

MR. MILLS: Yes.

MR. SHAW: I know they do not.

MR. MILLS: Okay. Do you know if Binnu is an engineer?

MR. SHAW: Yes, I believe she is.

MR. MILLS: Okay. Do you know if she is licensed to practice in the Province of Manitoba?

MR. SHAW: I would doubt she is, but I would have to check it. You can go in the Internet and look up at our association's website to see who is certified in Manitoba.

MR. MILLS: Yes, we know that.

The information that we can find with -- regarding Binnu is that her expertise seems to be in defusing land mines, and she does occasionally offer cave tours in around Canmore. With your understanding of this work, are you confident in her report?

MR. SHAW: Yes, I was confident in her report.

MR. MILLS: Okay.

Ryan Kilpatrick: We've tried to find him. We see that he wrote the Bipole report, and

Binnu wasn't involved. Was the Bipole report before your time?

MR. SHAW: Yes, it was somewhat before my time.

MR. MILLS: Okay. The only Ryan Kilpatrick that we can find holds a MA in diplomacy. Do you know if that's the same Ryan Kilpatrick who wrote this report?

MR. SHAW: No.

MR. MILLS: You don't know much about him either?

MR. SHAW: I would have to look it up. I mean, they do all usually have descriptions on Pembina's website.

MR. MILLS: Yeah. They are lean.

I've been asked to move along, so ...

We find -- we have some micro and macro concerns, but why don't we go to the big one first.

You understand that we are here because this is a Class 3 licence application?

MS. COUGHLIN: I understand you are here to represent Dakota Plains Wahpeton.

MR. MILLS: The "we" I was using, the big "we".

Well, I can assure you, we are here because this is a Class 3 licence application that requires a Clean Environment Commission review if the Minister chooses, and apparently she has.

Within the Environment Act -- I'm sorry, is it Michael?

MR. SHAW: Mike or Michael is fine.

MR. MILLS: I'm sorry.

Michael, within the Environment Act, are you familiar with the greenhouse gas language within the act?

MR. SHAW: Are you referring to Section 12.0.2?

MR. MILLS: Yes.

MR. SHAW: Yes, then. I am.

MR. MILLS: What is your understanding of it?

MR. SHAW: Well, I'll read it for you, if you'd like.

MR. MILLS: Yeah, I would.

MR. SHAW: "When considering a proposal, the Director or Minister must take into account, in addition to other potential environmental impacts of the proposed development, the amount of greenhouse gases to be generated by

the proposed development and the energy efficiency of the proposed development."

What I take from that is the Minister would like to know the amount of greenhouse gases being produced by the proposed development.

MR. MILLS: Okay. Great. We agree on something.

Can you go to the executive summary of this greenhouse gas report?

MR. SHAW: Yep.

MR. MILLS: I'm reading page 1. There is a pie chart. There is a paragraph above that.

How much greenhouse gas is the MMTP estimated to result in?

MR. SHAW: The estimate was that -- sort of the non-generation emissions from the project --

MR. MILLS: Yes.

MR. SHAW: -- as a result of construction, operation, maintenance, decommissioning, would be approximately 171,000 tonnes.

MR. MILLS: Tonnes of what?

MR. SHAW: CO2 equivalent.

MR. MILLS: Okay.

Now, let's go back to the Environment Act. And I suggest to you that you have a problem. The Environment Act describes greenhouse gas as -- certainly the CO2 that this report measures, but it also describes it as methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulphur hexafluorides, and any other gas proscribed by the regulation.

It seems to me that this greenhouse gas report has concluded only one of the seven gases that the Act includes. Would you agree with me?

MR. SHAW: No, the greenhouse gas assessment considered all of the greenhouse gases.

MR. MILLS: It doesn't say that, sir, with respect. It says it resulted in 171,081 tonnes of CO2.

MR. SHAW: Yes. CO2 equivalent is what we use to aggregate all of the greenhouse gases into one metric. What we used for this assessment was the 100-year global warming potential values for the various greenhouse gases. For example, for methane, we used a 25-year global warming potential value. So one tonne of methane would be equivalent to 25 tonnes of

CO2 equivalent.

MR. MILLS: We are concerned about the ability of the Minister to rely upon the figures arrived at in this report. Page 15 lists key assumptions; page 17 lists limitations of the study.

The report includes a significant value on the direct generation effects of line losses. We just an hour ago received an answer to our query with regards to line losses. Do you know if that information had been provided to the Pembina Institute in 2015, I believe, when they arrived at their line losses calculation?

MR. SHAW: Sorry, what information are you referring to?

MR. MILLS: Ms. Mayor provided us with an answer to our query with regards to line loss. We finally got an answer to line loss just a few minutes ago, and I'm wondering if you know if the Pembina Institute had that same information when they based 57 per cent of the direct generation effects line losses amount in this report.

I'd suggest to you, sir, that they couldn't have, and that what is presented as a definitive in the report doesn't correspond with

the information we now have. Would you agree with me?

MR. SHAW: So in terms of the information here, this is referring to sort of line loss on a megawatt level. What is important for the life cycle assessment is line loss on a gigawatt-hour level. So not capacity, but energy, over the 50 years of the project.

So what we did for this assessment is we took both a case that included the MMTP, as well as baseline cases without it, and looked at the sort of incremental increase in transmission, and we then correspondingly calculated what the resulting transmission losses would be, related to that.

So sort of apples and oranges.

MR. MILLS: Do you know what information the Pembina Institute had when they arrived at 229,550, 57 per cent line losses?

MR. SHAW: Yes, that was information I provided.

MR. MILLS: And was that information similar to the information that Ms. Mayor just provided to us by -- recently?

MR. SHAW: The information -- I don't

think it discusses lifetime actual transmission levels, with Ms. Mayor's information.

MR. MILLS: So her line loss is different than your line loss?

MR. SHAW: It is a different -- so we are looking at the amount of energy being transmitted over the line; we are not looking at capacity, and the different sort of line loss percentages at different capacity levels.

MR. MILLS: So --

MR. SHAW: Any information that Ms. Mayor provided, it sort of indicates what our expected line loss on a line would be at different loadings. What we looked at is sort of over the life of the project, and average levels of transmission, what would be the line loss related to the amount of -- sort of energy transmitted in gigawatt-hours.

MR. MILLS: Okay.

Have you reviewed the key assumptions that the Pembina Institute used on this project in arriving at their greenhouse gas assessment?

MR. SHAW: Yes, I have reviewed them.

MR. MILLS: We appreciate that the project hasn't started. We understand nothing has

been purchased. We in fact understand that tenders probably haven't been even issued for construction materials. As we review the key assumptions, we find significant -- we find assumptions that are significant.

In your knowledgeable opinion, would it surprise you if the final greenhouse gas emissions in this project varied by as much as 50 per cent of what the Pembina Institute projects they will be?

MR. SHAW: That would be surprising.

MR. MILLS: I see. Well, then, help me to understand. We -- we are simple minds; we are neither engineers nor scientists. We just look at numbers and try and make sense out of them.

We look at the Bipole III greenhouse gas report -- albeit before your time, and I respect that.

We see a more complex solution in Bipole. We see more land use change; we see more construction equipment, due to the remoteness and the difficulties of far-northern work. We compare that against MMTP. We read in Pembina Institute's analysis many, many, many low values, with

language like "adjacent to Winnipeg", "no need for travel", et cetera.

And then we do some simple arithmetic, and we take the 923,000 tonnes of CO equivalent which the Pembina Institute indicated Bipole III would generate, and we divide that simply by the length of the line. And then we do the same simple arithmetic on the Manitoba-Minnesota project, and we find a variance of 25 per cent in what we think is the wrong direction.

The Pembina Institute tells us that the greenhouse gas contribution, as a result of construction on the much simpler, much easier-accessed, less remote, less land change route of the MMTP, will create -- contribute 25 per cent more greenhouse gas.

We are wondering if one of the two reports is inaccurate, or if there is any plausible reason why MMTP would contribute so much more greenhouse gas in a simpler pro rata solution. Do you have any thoughts on that?

MR. SHAW: First off, where do you see the "no need to travel" assumption in the document?

MR. MILLS: Oh, it is throughout

the -- if you go to the key assumptions section -- it is -- it's laced throughout.

It would take me some time to find, but let me change to another question. Do you have the appendices for the greenhouse gas analysis in front of you?

MR. SHAW: I do.

MR. MILLS: We -- I guess, to cut to the chase, and get to the end, because I know the Chair would appreciate that -- we are suspicious of this greenhouse gas analysis, and we are not --

MS. COUGHLIN: Do you want Mike to provide some of the rationale for why there are differences?

MR. MILLS: Well, I want to explain to him where we are going, and maybe he can save us all some time by getting us there.

We are suspicious of this greenhouse gas analysis, and we're concerned that the Minister must -- not "should", "may", "perhaps" -- the Minister must understand the greenhouse gas produced by this project. And we are the first to acknowledge that all that Manitoba Hydro does upstream and downstream of MMTP is as good as it gets for greenhouse gas issues.

But with regards to this specific line, we see an obligation for the Minister to clearly understand what the greenhouse gas is. We look at all of the assumptions that are embedded within this report. We -- and I will stop and list a few.

AT27. We've heard from construction that we have trained tower erectors, but the Pembina Institute tells us that all labourers are to be flown in from Ottawa, because it is a large urban centre with access to labourers. We've seen Mr. Penner's YouTube presentation on Sikorsky S-65 helicopters burning 850 gallons of steroid kerosene per hour for months on end.

And candidly, Mike, we see too many holes in this greenhouse gas report for us to believe that the Minister can accept it, as she is required to under the Act.

So does this report include the use of helicopters in tower erection?

MR. SHAW: All right. So in terms of the use of helicopters in tower erection, I would guide you to -- I believe it is --

MR. MILLS: I'm in the appendices, where the values are, where the key assumptions

are.

MR. SHAW: Yep.

All right. So that would be activity 1830. And for that activity, we did assume the possibility of both traditional crane erection and helicopter erection.

MR. MILLS: Where does it say that?

MR. SHAW: It doesn't explicitly say it there, but in our assumption -- which, if you go to key assumptions and the actual numbers, I believe that's the next appendix.

We say that we assume consumption of 3,500 litres per kilometre. And that's specifically for the erection of the tower and the stringing of the tower -- as well as assembly, though there's not as much emissions from that, since most assembly is done by hand.

MR. MILLS: You assume 3,500 litres per kilometre?

MR. SHAW: Yes. And that's quite a bit of fuel, if you sort of consider it to filling up a tank of gas. It's about 70 tanks' worth, just to put some perspective in it for the room.

MR. MILLS: It is about an hour and a half of Sikorsky's S-65 time. And in a kilometre,

there would be perhaps two and a half towers. I would suggest that your extrapolation is far more efficient than Mr. Penner's YouTube presentation.

We could debate and slice and dice the assumptions all day long, and -- let me cut to the chase.

With your skills on staff at Manitoba Hydro, Mike, would it be possible for Manitoba Hydro construction to provide you with the real values over the course of this project, and for you to assemble and present an as-built GHG LCA at the end of the construction process?

MR. SHAW: Sorry, so first I would like to correct for the record the potential emissions from helicopter erection.

MR. MILLS: Yes.

MR. SHAW: All right. So from our construction, we assume an average consumption per hour of approximately 500 gallons of kerosene fuel. Translated to litres, we are looking at around 1,900 litres per hour. The emission factors for litres of kerosene, which is in fact less than diesel, is approximately 0.0026 per litre, or about 2.6 per kilolitre.

So on an hourly basis, we are looking

at emissions a little less than five tons.

I was in discussions with our construction crew. We look at construction days of around ten hours, and the helicopters are capable of erecting between about 25 and 30 towers a day. So the resulting emissions work out to around, on average, about 2 tons per tower, or about 4 tons per kilometre.

You'll recall, earlier on, I mentioned that we assumed fuel use of around 3,500 litres per kilometre. That would work out to around 10 tons. So the helicopter erection would be 4 tons, compared to our total assumption for the line of 10.

Now, obviously erection of the towers is a very intense energy -- sort of aspect of the construction of the line, so we think that's very reasonable, that about 40 per cent of the emissions would occur from the helicopters themselves.

So -- yes. I just wanted to correct that for the record.

MR. MILLS: For the record, we spoke directly with the vice president at Erickson Helicopters, and your consumption figure is low by

probably 25 or 30 per cent.

MR. SHAW: You stated earlier in the hearing that that was sort of the maximum possible. You said it was 700 gallons an hour at max, max. Here we are talking about 500 gallons per hour, on an average basis.

MR. MILLS: Rather than debate greenhouse gas with someone who clearly knows a lot about it, what I would ask quite simply -- and it is the same question we've asked on EMF.

Manitoba Hydro provides us assurances throughout this process of mitigation resolution: All is well. We don't get that comfort level, and we observe that on the issue of greenhouse gas, the Minister must. Would it be reasonable for a condition of this licence to require Manitoba Hydro to prepare, for lack of a better word, an as-built greenhouse gas report on the construction project? And would it be possible -- or would it be reasonable; I don't think it would be proprietary, or of any concern to your business department -- would it be possible for that report to be published, provided to the public, so that we could in fact confirm that the comfort levels that you give us were achieved?

And a second question, as other constituencies appear to, would it be possible, if the information was provided to you on a monthly basis, would it be possible for Manitoba Hydro to track that, and if it was determined that you were exceeding your greenhouse gas commitments, that mitigation measures could be further instituted to do what you could to get back to this commitment that you've given us?

So there is two questions: Can you track it? And can you track it monthly?

MR. SHAW: All right. So in terms of tracking, this is a life cycle assessment, and there is --

MR. MILLS: I'm just talking about the construction portion of the work.

MR. SHAW: All right. So in terms of construction, if you look at Appendix 3, we see the relative impact of that for the life cycle greenhouse gas emissions -- and this would be for both clearing and that construction/erection I was discussing -- was around 2 per cent of total life cycle emissions.

So from that perspective, I don't see much value in tracking those emissions.

On top of that, right here, we are just talking about non-generation emissions. When we do an assessment of the project from a global perspective, including generation effects, it is very likely that the project as a whole will lead to significant reductions in global emissions. You can find that in the technical --

MR. MILLS: Excuse me. Excuse me. You are out of scope. We are not talking about upstream or downstream of the Manitoba-Minnesota project; we are talking about this transmission line. And as Hydro stands firm on out of scope, as do I, please don't introduce red herrings to what we are talking about: 213 kilometres of construction. Let's stick to that, please.

MR. SHAW: All right.

In terms of monitoring, we, where necessary, have been conservative in our assumptions, and it would be very likely that we would become well under, if we actually tracked emissions.

And just to correct you, for life cycle assessment, it is actually very important to consider both upstream and downstream effects.

MR. MILLS: Well, sir, in closing,

when this project started, we received a couple of quantums. One is it was going to cost 350 million, and the other is it was going to produce a certain amount of greenhouse gas.

We've discovered that it is going to cost more than 100 million more, arguably a 33 per cent increase in the cost of construction. And although I'm not of the ability to debate as those numbers were debated yesterday, I would suggest to you that if construction costs have gone up by $100 million, that perhaps the greenhouse gas contribution may well have gone up as well.

So if we're chasing a moving target, why don't we acknowledge that, and why don't we agree that you'll tell us, when it is all over, what in fact the greenhouse gas was.

And I think it would be -- it would be good for those of us who are concerned about greenhouse gas, and I would also suggest that it would be good for Manitoba Hydro, to know that what they say is going to be tested.

You have no answer to that. I appreciate that.

MR. SHAW: So are you indicating that

because the price of material and fuel and construction goes up, that then the greenhouse gas emissions would go up as well? Because that would be more of a quantity aspect than the price.

MR. MILLS: If Manitoba Hydro is suggesting that the $103 million increase is entirely units of materials, and not quantities of materials, I could agree with you. But I would suggest that that isn't my experience in construction cost overruns. It is usually some of both.

That's a debate for another day. A couple of quick observations, and then I will let you go, and the Chairman will be pleased.

Do you review other projects and other constituencies, and do you attempt to do any research in what others are doing in regards to greenhouse gas contribution?

MR. SHAW: We do, from time to time, look at other environmental impact statements and things of this sort to see what other jurisdictions are doing in terms of evaluating the greenhouse gas impacts of a project.

MR. MILLS: Do you remember having reviewed the greenhouse gas emissions and fuel

consumption reporting for the Lower Churchill project, the Nalcor project?

MR. SHAW: Would that be the Hydro project, or the transmission project?

MR. MILLS: The transmission.

MR. SHAW: Transmission? I'm more familiar with the dam project.

MR. MILLS: That project makes two recommendations, and I wonder if you would be prepared to comment on them from your professional opinion. Within the the greenhouse gas emissions report on the Lower Churchill project and the Muskrat Falls transmission project, there are two comments that I would appreciate your opinion.

One is, they say -- and I quote:

"Burning of slash or debris will be specifically prohibited. Burning debris releases stored carbon as CH4, and also releases N2O, both of which are more powerful GHGs than CO2."

Would you agree with that statement, that slash releases those items, those elements?

MS. MAYOR: Mr. Mills, can you please provide a copy of the paper that you are looking at to them?

MR. MILLS: Yes, I will.

MS. MAYOR: Then I would like them to see that before you actually -- before they answer the question.

MR. MILLS: All right.

The same report -- and I will ask you to have a look at this -- indicates that an anti-idling policy will be implemented with respect to vehicle operation for the project, to reduce GHGs and particulate matter.

And I will provide this to you to read, but do you think that is something that would have any effect or value on this project?

MS. MAYOR: Again, I would ask them to read it before they answer your question. Thank you.

MR. SHAW: All right. First comment, I'm a little confused by the subject of burning of slash releasing methane and N2O in large numbers. From our experience, if you get full combustion, the carbon will then combine with oxygen to sort of form CO2; it wouldn't form CH4, which is methane. So I'm not sure why they think burning leads to significant amounts of methane and N2O when most of the combustion methods I look at, it

all -- mainly comes out as CO2.

As for the idling policy, for the record, I actually -- and this is for the Nalcor Energy, Lower Churchill project -- so their idling policy is -- and this is in the workbook they give, the site handbook, to the workers -- they state that:

"Project personnel are encouraged to reduce/eliminate idling of vehicles where practical."

And I understand this is similar to what we have in our own sort of project -- project plans.

MR. MILLS: So if those two points were a condition of the licence, would you have a problem or a concern with that?

MR. SHAW: Well, I don't understand the premise that you would -- burning slash would lead to higher levels of greenhouse gases, once again, because methane -- I don't understand how burning would lead to higher levels of methane.

MR. MILLS: So you disagree with that statement?

MR. SHAW: Yeah, I would.

MR. MILLS: Okay. Fair enough.

I will ask it in a simpler, slower form, and then I will be done.

We are suspicious of the greenhouse gas reports that the Pembina Institute provides us. We are unable to confirm the CVs of the authors. We sense, Michael, that you've reviewed them, but we -- so we wonder what would prevent Manitoba Hydro from preparing an as-built of the greenhouse gas LCA for the construction portion of this project. What would prevent Manitoba Hydro from doing that?

MS. MAYOR: Mr. Shaw has already been asked that question, and he's already answered it, that there would be no value in doing that. So we are going down the same path again.

MR. MILLS: Well, he said there would be no value, but he didn't answer the question, which is: Would it be something that Manitoba Hydro could do? In your opinion? I think whether or not it is it is of value, with respect to Mr. Shaw, will be the Minister's and the Clean Environment Commission's decision.

MR. SHAW: We want to focus on the life cycle emissions from the project. So there really is no way to, without onerous tasks,

determine that all the inputs to all of the tasks and activities in the life cycle were 100 per cent accurate.

And even after a project, you would still be using estimated values and assumptions.

MR. MILLS: Okay. Thank you.

Thank you, Mr. Chairman.

THE CHAIRMAN: Thank you. Thank you for the questions and thank you for the answers.

Mr. Toyne, you are up next. I believe you are the last -- and I will be very careful saying this -- participant to question. My understanding is you've got 15 to 20 minutes, so we would do it now and then take a break, as long as that's an accurate estimate.

MR. TOYNE: I certainly hope it is accurate.

THE CHAIRMAN: Okay. We will go 15 to 20 minutes, and hopefully that will conclude, and then we can get on, after a short break, with the presentation. Is that -- is that course of action acceptable to -- "acceptable" is the wrong word. Does Hydro have any objection to that?

MS. MAYOR: Sorry, there was discussion going on. The question was -- sorry?

THE CHAIRMAN: The plan here, Mr. Toyne is the last participant, so rather than take a break now, we will go on to Mr. Toyne. The best estimate at the moment is 15 to 20 minutes. So on that basis, we will proceed, and then take a break, and then turn to the next presentation.

MS. MAYOR: Yes, that would be good. We can then transition during the break. Thank you.

THE CHAIRMAN: I just wanted to be sure, logistically, that wasn't going to be --

MS. MAYOR: Yeah.

THE CHAIRMAN: Okay.

MR. TOYNE: Thank you, Mr. Chair. Kevin Toyne for the Coalition.

I've got a series of largely identical questions for Misters Block, De Carlo, and Gahbauer; I hope I have pronounced everybody's names properly. I am hopeful that each set of them will just take five to six minutes, and if I'm wrong in that estimate, I do apologize.

So the focus of the questions will be comparing the predecessor for the final preferred route and one of the route alternatives that the Coalition is suggesting should be adopted, and the

impact of smoke and ash from slash.

Mr. Block, why don't I start with you; I think your series of questions will go the quickest.

And just before I get into them, we got into a little bit of a debate yesterday, I don't know if you were here, on some terminology; there was an issue about whether or not the phrase "farm" included land. So just to make sure we don't stumble over anything like that today, when you were referring to watercourses and streams and creeks, those were streams and creeks and watercourses with water, or without?

MR. BLOCK: Both.

MS. COUGHLIN: That's a crazy question. Sorry.

MR. BLOCK: It does include ephemeral streams, which by definition occasionally do not have water. So I would say the answer is both with and without water. Although they do have water at some point in time; otherwise they are not waterways.

MR. TOYNE: Yes. All right. So just very quickly turning to the slash question.

The smoke that's generated from

burning slash, and the ash that's left over afterwards, does that factor into the analysis that you've done in any way, shape, or form? And if so, can you tell us how?

MR. BLOCK: No, we did not consider the effects of slash burning on fish and fish habitat.

MR. TOYNE: And if you had considered it, would it change your conclusions?

MR. BLOCK: It likely would not.

MR. TOYNE: You are familiar with the route alternatives from Round 2 of the process, Route SIL and Route AY?

MR. BLOCK: Somewhat.

MR. TOYNE: All right. And would you agree with me that the AY route crosses a fewer number of watercourses than the SIL route, which is the predecessor to the final preferred route?

MR. BLOCK: I don't have that information available.

MR. TOYNE: What I'll do is I'll give you a reference, and I will ask that you take a look at it as I sort of move down the firing line here.

And it is Coalition IR 251, it has an

updated Table 527. The initial Table 527 in the EIS appeared to be wrong in every possible way, so that there was an updated one that was provided.

And it's the stream and river crossings criteria, towards the bottom, that I'm referring to, so if you can pull that up and take a look, I can -- actually I do have one more question for you; sorry. Try to remember what I just said, and then answer this question.

There were concerns about effects on species at risk for both Route SIL and Route AY. From the perspective that you are representing, fish and fish habitat, is there a greater or lesser concern about species at risk if Route AY had been selected as opposed to SIL?

MR. BLOCK: The effects would be related to the number of stream crossings.

MR. TOYNE: So is it fair to say -- again, just in general terms -- if, when you take a look at that material, if it turns out that Route AY crosses a smaller number of streams or watercourses, then it would have less of an impact on fish and fish habitat than Route SIL?

MR. BLOCK: Sorry, can you -- if it turns out that Route AY has fewer stream crossings

than Route SIL, would that indicate potentially less impact?

MR. TOYNE: Yes.

MR. BLOCK: Agreed.

MR. TOYNE: Okay. So I will come back to you when you have had a chance to take a look at the number of stream crossings that's listed in updated Table 527.

All right. Mr. DeCarlo, we will go to you next. And again, just to make sure we don't run into any definitional problems, when you refer to forests, are those forests with or without trees?

MR. DE CARLO: Those are areas with trees.

MR. TOYNE: Okay. Excellent. This will go much smoother.

So you had referred to a -- the intactness criteria.

MR. DE CARLO: Correct.

MR. TOYNE: All right. And I think it was during Mr. Mills' questions for you, you'd indicated that you were personally familiar with some, if not all, of the final preferred route, even if you hadn't done the field studies

yourself.

MR. DE CARLO: I'm familiar with the final preferred route and the alternate routing that was considered, yes.

MR. TOYNE: All right. And with respect to the area around the Watson Davidson Wildlife Management Area, both west and east, are you personally familiar with that area?

MR. DE CARLO: Yes, I am personally familiar with that area.

MR. TOYNE: All right. And you would agree with me that at least to the east of that wildlife management area, that that area is able to be harvested for commercial timber purposes?

MR. DE CARLO: From my memory, yes, I believe it looked like it would be suitable for that. It was forested, and ...

MR. TOYNE: And you may know the answer to this; you may not. Would you agree with me that the area east of the Watson Davidson Wildlife Management Area has previously been harvested for commercial timber?

MR. DE CARLO: I'm not aware if the area east has or has not been harvested for commercial timber.

MR. TOYNE: And from your discipline's perspective, what would be more disruptive to the vegetation in that area: the area being subject of a commercial timber harvest, or a transmission line right-of-way going through it?

MS. COUGHLIN: I wonder if these are more land resource use-based questions? Is that --

MR. TOYNE: I'm asking him about trees being cut down, and I certainly hope that he can answer questions about trees being cut down.

MR. DE CARLO: I think there would be a lot of similarities between forestry and the removal of trees for the right-of-way on the MMTP project.

MR. TOYNE: So would you agree with me that if the area immediately to the east of that wildlife management area was the subject of a commercial timber harvest, that would be much more problematic than a right-of-way for a transmission line going through? Again, from your discipline's perspective.

MR. DE CARLO: From my discipline's perspective, again, I would say that the removal of trees for forestry or the removal of trees for

the right-of-way will have generally similar effects.

MR. TOYNE: And in your experience -- if you have experience -- when commercial timber is being harvested, is it harvested just in 100-metre-wide increments, or does it tend to be harvested over a broader space?

MR. DE CARLO: Depends on the tree species in the area, but clear-cutting would occupy a bigger area.

MR. TOYNE: All right. Now, are you familiar with Routes SIL and AY?

MR. DE CARLO: I have a graphic of both routes, yes.

MR. TOYNE: Okay. Now, with respect to some of the plants and vegetation species that were of conservation concern, or species at risk -- and again, this is just from your discipline's perspective on species at risk -- is there much of a difference between those two routes? Is one particularly more problematic from a "species at risk" perspective than another?

MR. DE CARLO: Well, the north/south direction portion of the routes are fairly similar, and they share a common portion. But the

further east you go, you encounter more native vegetation, more intact vegetation. So the preference would be, from a general perspective, would be the Route SIL, which is farther to the west.

MR. TOYNE: So I get, from a general perspective -- I was talking more specifically about species at risk or species of conservation concern. Is there more of a risk?

MR. DE CARLO: Yes, there is. So the two are connected. The risk to species of concern, or species at risk, is greater in areas that have a greater proportion of native vegetation as opposed to areas that have been previously disturbed.

MR. TOYNE: All right. So in theory, AY would be more problematic.

Do you know what sort of surveys were done in the area that AY would traverse that's different than route SIL, that would provide concrete support for the theory you've just advanced?

MR. DE CARLO: Well, the theory I've just advanced is not just field work; it is also supported by scientific literature and previous

recorded occurrences of where these species have been found. But I can look up our maps of the survey sites to see what surveys were done in those areas.

MR. TOYNE: All right. Sitting here right now, though, are you aware of any surveys being done up in -- sort of south of Vivian, in the Vivian-St. Genevieve-Richer area?

MR. DE CARLO: I can't say specifically if survey sites were located on those two particular portions of the routes.

MR. TOYNE: I understand there is a 30-metre setback or buffer that's applied if a species -- if a plant species that's of concern is found. Is that a standard setback or buffer for at-risk plants when they are discovered?

MR. DE CARLO: The buffers vary, depending on the province or region in which they are located. That buffer distance was recommended in discussions with Manitoba Sustainable Development.

MR. TOYNE: Is that a hard buffer, or is it a soft buffer?

MR. DE CARLO: Buffers in general, for rare plants, are guidelines. There aren't strict

regulations, in general, for setbacks for rare plants.

MR. TOYNE: All right. And the preconstruction surveys that will happen along whatever the final preferred route might be, are those surveys that are done of the entire right-of-way, or are just representative samples taken for survey purposes? Do you know?

MR. DE CARLO: I'm not certain of the actual plans for the surveys, like, the fine details for where surveys are located. But it would be specific to areas that have greater potential for rare plants and species at risk.

So, for example, route ditches, cultivated fields, would not be subject to further survey for species at risk or rare plants.

MR. TOYNE: And you may not be the right person to answer this, and if you are not, I apologize. If a land owner has concerns about the presence of plant species that are rare, or of conservation concern on their property, and say it is property that falls outside of the categories you just referred to as being the targets for these surveys, would that landowner be able to contact Hydro and have someone come out and take a

look to confirm whether or not that plant species is present?

MR. DE CARLO: My understanding is that yes, they could communicate that to Manitoba Hydro, and Manitoba Hydro would listen and take appropriate action.

MR. TOYNE: All right. And from -- actually, no, I don't believe I've got any further questions for you.

So, Dr. Gabhauer. Again, from the perspective of the smoke and the ash from slash burning, was that a factor that you took into account in the assessment that you were responsible for?

MR. GAHBAUER: No, we didn't explicitly consider that. It is a temporary, ephemeral condition, and would be equivalent to small fires that occur with regularity.

MR. TOYNE: All right. If you had taken it into account, it I take it wouldn't have changed the outcome of your analysis?

MR. GAHBAUER: I don't imagine it would, no.

MR. TOYNE: Are you familiar, at least in general terms, with Routes AY and SIL?

MR. GAHBAUER: Yes, I am.

MR. TOYNE: All right. So on Table 526 in the EIS, both Routes AY and SIL are -- one of the "Natural" comments that's listed is that they are both less preferred because of higher potential effects on species at risk.

So a series of questions for your discipline. So for the mammals that you took into account during your assessment, is one or both of those routes particularly problematic for any of those mammals?

MR. GAHBAUER: There are a couple of layers that are getting confused there. For mammals, yes, there is more suitable natural habitat for mammals along AY than there is SIL, but none of the mammals that we looked at -- well, I guess for bats, it would be species at risk; but most of the other mammals are not species at risk, so there's two -- two considerations there.

MR. TOYNE: All right. But from the species at risk perspective, there may be a difference, but it is not a significant difference?

MR. GAHBAUER: We didn't assess significance at this stage. This was a routing

exercise, so we looked at the overall metrics and comparisons. We didn't evaluate the significance between them. But there is certainly more natural habitat, and on the basis of that, we perceived there to be more potential risk for wildlife in general.

MR. TOYNE: Again, I take the point that was raised by your colleague that if there is more natural habitat, there is greater potential impact.

But specifically -- if, for example, if Route AY or some modified version of that is eventually adopted, are there specific impacts with respect to mammals that are species at risk, that you are aware of?

MR. GAHBAUER: The specific impact is simply a greater amount of habitat loss and the resultant impacts of that.

MR. TOYNE: Same question with respect to the amphibians and reptiles that you took into account in your assessments.

MR. GAHBAUER: To a large degree, it would be the same for all wildlife, yes. With more habitat, there is more potential risks and -- yeah, I think that would be the same.

MR. TOYNE: It struck me from your presentation that at least for some types of birds, that the answer might be slightly different, because the creation of the right-of-way can -- it may be disruptive at the outset, but it can actually create additional habitat; is that a fair take-away from your presentation?

MR. GAHBAUER: Yes. So there are species where -- if they are more open forest or edge species than if you are creating an edge from a forest. Then those species would respond accordingly.

MR. TOYNE: So then, to go back to the response for mammals and amphibians and reptiles, if you are taking up additional natural space -- and I apologize for the inelegant term -- it may not be as problematic for birds as it is for the other two categories?

MR. GAHBAUER: It depends on which birds. For some it is, and for some it is not. The general principle is that any time that we make a route longer, it is generally less preferable from a wildlife perspective, because there is more disturbance, and more response

required.

MR. TOYNE: Right. So just to make sure I've got that, so in addition to the amount of space that's being taken up by the right-of-way, a longer right-of-way is more problematic from a wildlife perspective?

MR. GAHBAUER: Longer is generally less desirable, all other things being equal.

MR. TOYNE: Right.

If I told you that Route SIL was longer than Route AY, you would agree with me, then, just to go back to the point you just made, that generally speaking, Route AY would be preferred, from a wildlife perspective, than SIL? Assuming that AY is shorter than SIL.

MR. GAHBAUER: As I said all other things being equal. So length is one consideration. I wouldn't suggest that the two routes are equal in other ways, though.

MR. TOYNE: All right.

I think I'm almost out of time, Mr. Chair, so I will ask what I think is a final question.

Something you didn't talk about in your presentation but does show up in your

technical report is there is a number of species at risk or of conservation concern; different moths, butterflies, other types of insects. Any difference between Routes AY and SIL from the bug perspective?

MR. GAHBAUER: Difficult to say with certainty. But again, heading further east, in toward the more contiguous forest associated with sandy lands and so on, there is more suitable habitat in there for the dusty wing, and probably monarch as well.

MR. TOYNE: Mr. Block, just to go back to you, were you able to pull up the number of water crossings between those two routes?

MR. BLOCK: Based on the information I was able to find, Route SIL has seven crossings and Route AY has three. Does that match what you perceive to be correct?

MR. TOYNE: I've got 27 for SIL and 14 for AY. I think the percentages still hold. It is about half -- about half as many crossings on AY as opposed to SIL.

So, again, just to go back to the earlier point that fewer crossings are better, all things considered: If AY has fewer crossings, you

would agree with me that from a fish and fish habitat perspective, it would be the preferred route?

MR. BLOCK: That's a fairly general statement. In general, less is better. It would depend on several other factors; riparian quality, et cetera.

MR. TOYNE: I suspect that's as far as you can go, and I will take that.

No further questions, Mr. Chair.

THE CHAIRMAN: Thank you, Mr. Toyne, for the questions, and --

MR. TOYNE: I hope I was right on with my time estimate. I lost track.

THE CHAIRMAN: Yeah. You are within one minute, actually, so thank you. You are good. Okay. Thanks also, of course, for the responses.

We will reconvene at 25 to 4 with the next presentation. Thanks.

(Recessed at 3:20 p.m. to 3:35 p.m.)

THE CHAIRMAN: Okay, I wonder if I could ask everyone to take their seats.

All right. We are now turning to Manitoba Hydro's last presentation. That's the Environmental Protection Plan monitoring and

conclusion. It is my understanding that that presentation is broken into four parts, and we are going to get through the first two before we adjourn today. Is that everyone's understanding?

MR. MATTHEWSON: There is a total of three parts, and we will do the first two today.

THE CHAIRMAN: Okay. Total of three, and we are going to do the first two today.

Anyone to swear in?

(Environmental Protection Program Panel sworn)

MS. JOHNSON: Could you please state your name for the record?

MR. WIENS: Jonathan Wiens.

THE CHAIRMAN: All right. Then I will turn it over to Manitoba Hydro.

MR. MATTHEWSON: Good afternoon, Commissioners and participants.

I would like to share with you today the Environmental Protection Program that Manitoba Hydro has developed for the project. This is described in chapter 22 of the environmental impact statement, as well as several IRs on the topic.

My name is James Matthewson. I feel it is important to clarify my role at Manitoba

Hydro. I have been characterized as the V.P of transmission; I have been characterized as an engineer. I have an honours, a bachelor of science in forestry, with 19 years of experience in the forest industry, Manitoba Conservation, and Manitoba Hydro. My current role is the senior environmental assessment officer for Manitoba Hydro.

I will be presenting today with Jonathan Wiens, to my right, a certified wildlife biologist with nine years of experience working with Manitoba Conservation and Manitoba Hydro. Jonathan is a biophysical analyst with Manitoba Hydro in the licensing and environmental assessment department.

So I will kind of go through the program as an overview itself. We will talk a little bit about lessons earned. We will talk a little bit about the environmental protection program and all of its various parts. And then Mr. Wiens will be going through our environmental effects monitoring plan, and then we will come back, likely on Tuesday morning, and I will talk about some more of the adaptive management and conclude the presentations for Manitoba Hydro.

So the Environmental Protection Program was developed from a comprehensive review of all of our projects that we've done to date. Of course we have had many transmission projects happen since the Bipole III project, and each one of those projects -- such as the Lake Winnipeg East municipal improvement project, the Keeyask transmission project, the St. Vital transmission project -- there is a variety of different improvements or adaptations and learnings we have learned as we've gone throughout the last five years.

We cover off in this big program we call the EPP program, the implementation, the management, and the monitoring of mitigation measures, as the previous panel has described, to mitigate the potential for effects that were described by the socioeconomic and biophysical panels.

There are components that adapt and interact with each other. There is the Cultural Heritage and Resource Protection Plan, there is the Construction Environmental Protection Plan, there's the Access Management Plan and -- I'm going to go through all the variety of plans that

we have, but they are all kind of intertwined and intermixed together; that's why we have them all together as one program.

The program itself is intended to describe the who, the what, the where, and the how aspects of protecting the environment in all phases of the project.

So some of the lessons learned include the Environmental Protection -- including the Environmental Protection Program documents. So we've submitted several draft plans as part of the environmental impact statement, so the Construction Environmental Protection Plan, the Environmental Effects Monitoring Plan, the Access Management Plan; something that we learned through our previous projects is to get those documents drafted with the environmental impact statement, and reviewed through the entire technical advisory committee review, as well as the public engagement review process that the regulator takes care of, as well as the Clean Environment Commission's review.

We have a development of a clearing plan. So we have a -- something we haven't done on a project like this; we've developed an annual

harvest plan for the Bipole III project, and this will be similar to that, but it is going to be a little bit different, and I will describe how we've changed and adapted it for the MMTP project.

There is many mitigation improvements that we have encountered over the last five years throughout the various transmission projects that we have under construction currently.

And with respect to biosecurity, as you heard from Mr. Stuart, various design measures that we have been incorporating and improving on as we've developed projects.

Language improvement, for clarity. So in an environmental protection plan, a construction one or an operational one, they get to be pretty thick documents, and there is a lot of -- there's many, many, mitigation measures, and sometimes the language that we choose is not always clear to a contractor or to the environmental inspector who is implementing that plan.

So we have made a variety of language improvements, using more common language, so that it is -- and clarifying language to some of our mitigation measures, so they are more clearly

understood by the construction contractor.

Packaging and formatting of documents. We certainly have developed a variety of different formats, about how we put all of these volumes of environmental protection mitigation measures information together, so that they aren't lost in a binder in the back of a truck. We do things like binding various pieces of them together; we look at different ways of binding the documents together, to improve their durability, and looking at different paper weights and binding techniques, to just make sure that the documents are durable. They are used on tailgates of trucks, the map books that we will be showing you some examples of.

So we want to make sure these documents are very usable and durable, so that they last throughout the construction season. But we re-issue new documents every year, and there is enhancement and improvements on an ongoing basis throughout the construction period, and those are issued through amendments.

We have also been experimenting with new mechanisms of community involvement in our construction plans, both during construction as

well as involved in the implementation of environmental inspection and monitoring, as well as some of the follow-up monitoring that occurs.

So on the Bipole III project, we had the concept of community liaisons and environmental monitors that were hired from local communities, and participated on the projects during construction activities, and also participated during some of the monitoring activities that are part of our monitoring plan that happen in the summer season -- spring, summer, and fall months, when construction may not be occurring in the north.

On the Lake Winnipeg East project, as an example, we did something a little bit different; we had a community representative, and we had a Manitoba Hydro employee that would take those three community representatives all together in one truck, from the local communities, and they would -- too fast?

THE CHAIRMAN: Is it the speed?

THE REPORTER: Yes.

MR. MATTHEWSON: I will slow it down.

THE CHAIRMAN: I thought you were saying someone is too high.

MR. MATTHEWSON: So on the -- as I mentioned, on the Lake Winnipeg East project, we got community members to work together with a Manitoba Hydro employee that would tour them along the construction project, and this happened two or three days a week, and they got to see any and all parts of the construction of the project, and they were involved in a variety of the monitoring activities during the non-construction season.

So on the MMTP project, we will talk a little bit about -- coming up, a little bit about our plans for this project and community involvement.

So here is a graphic of the Environmental Protection Program. And I'm going to provide you a brief overview of the different components here. And I know they will be hard to read, all these little items on the slide, but I'm going to be going through each one of them in further slides.

So, overarching, we have the program, and we have the system called the environmental protection information management system, and it is meant to manage and organize all of the different components, and I will talk a little bit

about it later on.

We have the resources, so we have a variety of resources within construction, as well as resources and information gathered from communities, as well as the First Nation and Metis ongoing engagement processes and involvements in some of our monitoring activities.

We have a communication module that deals with some of the mechanisms by which we communicate our project activities, both internally and externally, including things like websites and reports, and I will go into that in a little more detail.

We have management plans. This one here, which we will talk about briefly, about -- all of them, but we'll go in detail about a few of them as I go through the presentation.

We have environmental protection plans, so these are the construction environmental protection plan, that's what will be filed with the environmental impact statement, and that's the current draft that we have.

Operation and maintenance plans; those would be developed prior to the project going into in-service, and they are very much a carry-over of

what the Construction Environmental Protection Plan has in it, as far as environmentally sensitive sites. But the nature of operations and maintenance is different than construction, so that's why we have different plans for the different types of work being conducted.

We have a decommission environmental protection plan, and of course this won't be developed, as mentioned in previous presentations, until such a time that the project would be decommissioned, and be developed in a way that honours any type of current legislation and regulations and state of science at the time of decommissioning.

And we have a Cultural and Heritage Resources Protection Plan, which I will talk about a little bit more further into my presentation, but we have glanced on it a little bit in a few of the other panels about that plan.

We have an inspection program, which has dedicated Manitoba Hydro environmental inspectors that do conduct daily inspections on construction activities and submit annual reports and -- annual reports and monthly reports through the environmental management team.

And then we have the monitoring plan, that covers off the biophysical and socioeconomic monitoring that Manitoba Hydro is proposing for this project. Again, it's draft. Most of these products are draft because they are subject to, of course, any license conditions or CEC recommendations that may come in. We will incorporate those into these products, and then finalize them prior to construction.

And Jonathan will be talking about the monitoring plan in much more detail.

So the senior transmission -- so I was going to show you a giant org. chart with all the different people involved in the Environmental Protection Program, but I thought I would just kind of give you a collage of faces to kind of put to the program rather than just my own.

So we've -- so at the top of the organizational structure, we of course have Manitoba Hydro senior management, who is responsible for the overall Environmental Protection Program, including the resourcing, the management and performance, and is accountable for the regulatory compliance, policy adherence, and customer satisfaction.

While the senior management team is composed of career engineers at Manitoba Hydro -- so this is Mr. Penner, you met earlier; this is on a site visit on the Bipole project.

This is Mr. Mailey, the real vice president of transmission, illustrating some of our biosecurity procedures, cleaning a boot.

And this is Mr. Gerald Neufeld, the director of transmission planning and design. And he is involved in some of our monitoring programs -- in this picture, for caribou.

So they have been involved -- the career engineers, as has been pointed out, they have been involved in all aspects of transmission line construction and operations, including environmental protection. I report through these gentlemen about our environmental protection, or other components of the environmental protection staff report directly to these folks.

It is these career staff that maintain that organizational memory that the CAC pointed out about maintaining -- when you have engineers and senior managers that have been with Hydro for 30 years, and you have someone like myself, who's only been for ten years, certainly a lot of what I

learned from Manitoba Hydro's past practices and how construction was done or environmental protection was done was by working with these individuals.

They of course conduct those site inspections during both construction and operations, and take an active role in my department's role, which is licensing and environmental assessment and monitoring of transmission lines.

So the next step down is the environmental protection management team. So this is a variety of folks that we have in this. This is Ms. Fiona Scurrah; she leads up the construction and environmental protection team. So when I -- my team develops the Environmental Protection Program documents, she is responsible for implementation of those plans, and working with the contractors to make sure they're compliant.

We have Mr. Kris Watts; he works in my department, in developing a lot of the written materials that you have in front of you, those draft construction environmental protection plans.

And we have Mr. Trevor Smith; he is in

our line maintenance department, in the south, the manager.

We have Ms. Johnson -- you may not recognize her; she looks a little different in this -- in the red suit.

She is involved in much of our monitoring activities as well.

That's Amber Lahti; she is the environmental specialist on transmission line maintenance.

There is myself, in my fancy fur hat there.

We have Mr. Jim Kiel, who is the manager of construction.

And as well as Ms. Anne Melinchuk, who works with Fiona in implementing the Construction Environmental Protection Plan.

So all these folks here form what we call the environmental protection management team. We meet on a regular basis to discuss projects, mitigation issues that are coming up during construction, scheduling, about when new construction is starting and stopping, discuss things like reduced risk timing windows, and a variety of real-time construction-type activities

that happen in the nature -- in due course.

As much as we plan as thoroughly as we can in the development of construction in the Environmental Protection Program, we have to be adaptive; we have to react to new things, changing conditions all the time. So this team meets regularly, every two weeks, to discuss any ongoing issues and develop new mitigative strategies, or develop improvements to documentation, that sort of thing.

Then of course the "boots on the ground" kind of folks are involved in the environmental protection implementation team, so a few of these are -- work for Ms. Scurrah.

There's Evan Johansson. This is Mark Roddy, and Dave Fehr. This is Geoffrey Nolette. And a variety of different construction workers.

So those inspectors all have different expertise in environmental protection. They have been chosen and hired for a variety of their expertise. Mr. Fher, as an example is an expert in soil decontamination and spill response. Mr. Johansson is an expert in -- as a forest technician.

And we also have environmental

monitors. So this is a lady by the name of Nancy, from TCN; they are flagging a riparian buffer, working with the environmental inspectors.

Up here we have some of our consulting staff and licensing staff doing heritage investigations on a new right-of-way.

And of course there is -- some of the key department members here, Ms. Johnson again, and Mr. Trevor Barker and Jonathan Wiens and myself, involved in a lot of the monitoring activities that are conducted as part of this project.

So, another key component to our organizational structure is regulatory First Nations and Metis ongoing input. So we have a variety of different mechanisms by which we gather input.

So this is a picture of -- all the folks in the orange hats here are some of the regulators working for Manitoba Sustainable Development on site visits; they come up on site visits, both to the generating stations and are involved in some of the transmission line construction and seeing the different activities that are going on and observations.

We have overflights that we involve -- overflights that involve elders. This was a flight that I took with an elder from OCN in the area of Bipole III, just validating some traditional sites that they were concerned about, and validating whether they were or were not on the right-of-way of the project.

We have engagement meetings, so those ongoing community engagement meetings, where we bring out some of the activities or a description of the different monitoring activities that we may be conducting, some of the mitigation measures we are putting in place, to have that discussion about -- what other things can we be doing on the landscape for monitoring? What are the other concerns that particular communities or individuals may have.

And of course we do field visits with -- this is a field visit on the Lake Winnipeg East project, with Ms. Johnson, Mr. Barker, and myself, and one of the regional biologists from Manitoba Sustainable Development, talking about access and access restrictions.

This was a berm in place on one of the access roads; pre-existing berm that Sustainable

Development put into place, and we were discussing how we were going to maintain that for construction and operations of the transmission project.

This one is an example of a camp program that we put on for the Bipole III project, to bring elders and youth together to discuss traditional activities and participate. It was a week-long camp. We had folks from Roseau River First Nation, Dakota Tipi First Nation, and Swan Lake First Nation, and the Manitoba Metis Federation participated with some youth, where we did a variety of different activities; brought in some traditional drummers -- by the name of Coco Stevens. I'm not sure if you've heard of him; he is a pretty famous recording artist. We brought him in and taught kids -- and taught me -- a few songs on the drum, very interesting for them and myself.

And one of the days, we took them out to M602F transmission project, which is in the MMTP study area, and talked about and helped them participate in the environmental monitoring activities.

So we talked about -- we had some

traditional plant identification. We talked about some of the GPS technologies that we use to map and delineate. And environmentally sensitive sites, we talked about transmission line safety, and how youth should take care when -- you know, being around transmission lines; they are not something they should be climbing on.

And there is a variety of different activities that we conducted with the youth, which was a very good success. There was very good feedback from that program.

So all of those kind of people, and all of those mechanisms of input, from the regulator and from the First Nations and Metis engagement processes, come together into some of these documents that we are going to talk about today.

So the draft Construction Environmental Protection Plan, its purpose is to provide the information that will guide the contractors and field personnel in constructing the Manitoba-Minnesota project in a manner that meets environmental legislation requirements and is respectful to the environment.

The Construction Environmental

Protection Plan outlines all the commitments and efforts that will be taken by Manitoba Hydro and its contractors to protect the environment and mitigate potential environmental effects that may occur during construction of the project.

It is a practical, direct implementation of Manitoba Hydro's commitment to responsible environmental stewardship. So it contains a variety of things. There is almost 100 different specific mitigation measures for specific environmentally sensitive sites. We have over 400 general mitigation measures that are described. We have descriptions of the setbacks and buffers that are on a variety of different environmentally sensitive sites. We have discussions about the reduced risk timing windows for calving seasons, breeding birds. We have the biosecurity standard operating procedures in there, and then we have the frameworks for the contractor management plans, which I will talk about a little bit later.

So those general mitigation measures, those 400-odd mitigation measures, are categorized into -- I didn't even count them; I don't know how many categories, but these categories are

organized by topics or activities.

We have what we call the INGs; we have draining, drilling, demobilizing, burning, clearing; those are kind of categorized so that a construction person can just go to that and say, "I'm clearing today." All mitigation measures that are pertinent to clearing are in that one spot. But if they had a specific concern about a stream crossing, we have specific things that cover -- just bring all the stream crossing mitigation into one spot, too.

So you will get a lot of the stream crossing mitigation in the clearing, but you won't see it in the burning table. So we have kind of cross-referenced between the two, and it allows -- because people think of what they do in different ways; they may think about a specific spot or stream crossing, or maybe they may think about it -- "Hey, I'm the grader; I'm grading. What do I have to know about grading and environmental protection?" That's why we have a grading category, so that they can just go there and look at everything that's pertinent to them for their activity.

This is an example of a construction

environmental protection plan map that the contractor gets. It is an 11-by-17 map, so it is fairly large in scale. We have all the different project components in the legend; we have -- and then, over here, all the environmentally sensitive features on the landscape, so I will walk you through this.

This is a map out of the -- the draft one for MMTP. We have some boundaries of the Sandilands Provincial Forest. The blue line represents the centreline; the white lines represent the right-of-way bounds. We don't have the towers laid onto this yet; they weren't developed at the time of drafting.

We have an example of an "eco". So this is a species of concern, polygon, we have little dots with numbers that correspond to some tables here that tell the operator when they are entering or exiting the species of concern area, with coordinates, so that they can be mapped and delineated in the field with flagging as required.

We have some aquatic -- water crossing-type mitigation areas; we have stream crossing right there, represented by a point. We have the yellow, which represents birds and bird

habitat mitigation measures. That's a location where bird-wire diverters, or bird-wire collision diverters would be installed.

So what goes with this map, they have an ortho with some fairly high-resolution imagery, so they can see -- the other thing that's noted on here is this is the access, the defined access to get to the right-of-way, so this is the trail that they are approved to use.

On the other -- on opposite side of that map book, so when they open the map, they see the map on this side, and the opposite side they see this, which contains a table of each one of the different DSSs.

It talks about why, or what the potential effects could be, so it informs the user -- well, this one is an archeological -- potential archeological resources, because it is a river crossing.

So it talks about the potential disturbance for heritage resources. We don't get into a lot of detail about what could be there, and so there is a lot of concern with people, certainly from communities, knowing what kind of heritage resource might be there. So we leave it

general, and we just put in the different measures that should be followed for specific mitigation. So these are measures that are very specific to this site. And sometimes they change from site to site; sometimes they don't.

Plant species of concern. This one, is potential loss of species of conservation concern from clearing, construction, maintenance

You will notice here we didn't -- a lot of people ask us, "Well, what plant is this?"

Slowing down.

So one of the things that they ask is, just plant species of concern: What kind of plant is it? And we have to tell them. But it doesn't matter what kind of plant it is; you follow this mitigation, and this is what you are supposed to do. Because some of these plants are rare plants. We obviously don't want to publish these -- these documents are public; we don't want to publish this information for anybody to go and pick these plants. The specific information is available to the environmental inspector who is on site, if they did need to know it, or of course they also may be identifying -- there may be additional plants that weren't identified during the original

delineation of this.

And similar concern that we hear about cultural and traditional use sites, is the community is very hesitant to give very specific information, because -- you know, we do have to put the stuff in and make it publicly available, but we talked about ways by which we can mitigate that concern by not -- by not identifying exactly what is there, just saying -- "Here is what you can't do there. It doesn't really matter what's there; you can't do these things", or "This is the mitigation measure that you're supposed to follow."

Cultural and heritage resource protection. The plan contains that information on the resources and the procedures that Manitoba Hydro and contractors, in the event of discovering a previously unrecorded cultural or heritage resource.

So there is a variety of steps that a construction contractor is supposed to do. If they are excavating a foundation, and they see something that is foreign to them, that they think might be a potential heritage resource, we provide training to all staff on the construction project.

We do it in a variety of different ways. We have video tutorials, which every contractor staff will view, and it is simply a presentation that's been recorded by our project archeologist. But we also do hands-on training with key folks like the environmental monitor, the environmental inspectors, some of the construction supervisors; or we bring an archeologist into a room, prior to project start, and they describe different artifacts that potentially could be found and what a heritage resource looks like, so that they are more knowledgeable about anything like -- like prayer trees and tobacco ties. There is an education that's given to those staff.

It is in videos; all those topics are covered, but it is a much more hands-on interactive process when we do it in a procedure, office presentation style.

We have, as outlined, the procedures which a contractor or a Hydro employee is supposed to invoke, clearly outlined. If they suspect anything, immediate stop of construction, immediate buffering of the area, immediate contact the project archeologist, take pictures, send it to the project archeologist for further direction

of what to do.

A lot of times they will just stop working in the area. A project archeologist will come out the next day, and we will of course contact -- once the archeologist is there, depending on the nature of what it is, we have a protocol in our cultural and heritage resources protection plan that we ask communities to fill in.

It identifies a key contact who we can call if we do discover something. It identifies any other -- it asks for any other information about any other potential heritage resource types or sites that they may know of.

But its primary focus is to have a key person that we can call in the event that there is a discovery. Having that clear line of communication, sometimes -- you know, making a call to the band office, it may not get somebody out on site as quickly as we would like, so we developed these protocols with communities, and we invoke them as soon as there is some sort of heritage resource discovered, so that everybody can participate in the investigation and discussion with respect to mitigation measures.

The plan also has an appendix that contains a lot of examples of heritage resources and keys that people can -- sorry, examples of heritage resources that people can identify and be familiar with what they could potentially see on the landscape.

So the -- so what is the contractor's role in environmental protection? Hydro develops lots of different documents. We include all of these documents as drafts in the tendering process, so the contractor is fully aware of all the environmental commitments that Manitoba Hydro has made for this project, and that they have to fulfill. It is all part of the tendering process, so there is nothing out of the blue that -- "Oh, we didn't budget for that."

It is all included in that process, and they are ultimately accountable for all the regulatory and environmental mitigation measures implementation on the project. Manitoba Hydro is there to inspect and ensure their compliance with these documents, but they are responsible for implementation of many components of it.

And as mentioned in previous, from Mr. Penner, there are penalties. There is

penalties for non-compliance with the Construction Environmental Protection Plan. Financial penalties, stop-work orders; a variety of mechanisms that Manitoba Hydro has to enforce on its contractors compliance with its Environmental Protection Program.

They are also required to have a dedicated environmental officer on site, who is responsible for contractor staff training, mitigation measure implementation, and adherence to the Construction Environmental Protection Plan.

So it is not Manitoba Hydro's environmental inspectors out there baby-sitting the contractor, making sure they are doing their job, and there's just one of ours; we have a requirement for the contractor to have their own environment people on site, directing their contractors and training their contractor staff about how to implement the environmental protection plan. Our environmental inspectors are there to ensure their compliance.

I think from here I'm going to pass it over to Mr. Wiens to talk about environmental monitoring.

MR. WIENS: Hello. Good afternoon.

As James introduced, my name is Jonathan Wiens; I'm a biophysical analyst with Manitoba Hydro, and I'm here today to give an overview of the draft environmental monitoring program.

So I have a bachelor and master's degree from the University of Manitoba. I also have five years' experience with Manitoba Conservation and four years' work experience with Manitoba Hydro. I'm also a certified wildlife biologist through the Wildlife Society.

So as a brief overview of my presentation today, I'm going to try to cover four main areas. I want to discuss why we do environmental monitoring; some of the lessons learned that we incorporated as part of this monitoring plan; valued components, some examples, including vegetation, mammals, birds, amphibians; I want to discuss adaptive management, and finally reporting.

So as I'm sure many of you have read, within chapter 22 of the EIS, Manitoba Hydro included a full and complete environmental monitoring plan in a draft format. And to my knowledge, I think this is the first time for a

Class 3 project that a full and complete monitoring program was submitted as part of the EIS.

And it is a pretty thorough document. It is over 100 pages in length, and I can't -- I don't think that I can do it justice within 20 minutes, so I'm going to try to pick some highlights of this monitoring plan to help convey to the Commission, to the audience, and to the intervenors, the level of depth and information that we've included in this monitoring plan, and why we think it's done a really good job of summarizing the key areas and doing a good job of monitoring the project.

So why do we monitor? This is a slide that I think is pretty important, and it was something that we used as we developed the monitoring plan from the beginning.

So some of the main questions are, you know, we want to confirm the nature and magnitude of effects. We want to assess effectiveness of mitigation. We want to identify any unexpected effects. We want to identify additional mitigation measures. We want to confirm compliance with regulatory requirements. And we

want to collect information to evaluate the long-term changes or trends.

I think this is a pretty important slide, because it underpins the entire purpose of our monitoring program. And I'm going to refer back to it at later stages within my presentation today.

These are the six important factors that we're constantly striving for within the monitoring process for this project.

Lessons learned: I think this is a familiar refrain for the Commission and everyone who's been listening to these presentations over the last week.

I want to speak how monitoring plans for other projects conducted by Manitoba Hydro have contributed to the development of the draft monitoring plan for MMTP.

So the Wuskwatim transmission project, the Bipole III transmission project, Keeyask transmission project, and the Lake Winnipeg East transmission project, all had approved environmental monitoring programs as part of their development. So all these plans helped us in development of this draft plan for MMTP.

I think one of the key things that I know, as someone who helped work in development of this plan, was important is that we actually started the monitoring plan right in the VC selection process, so right at the beginning of the project planning phase, we designed many of our field programs and our data-collection process to contribute to developing monitoring as the project proceeded.

So it wasn't an afterthought; you know, post project or post assessment, we thought about monitoring. It was something that we thought about right at the beginning of the process.

We used statistically measurable designs to ensure that we have information that we can collect from the beginning right through postconstruction, and have a valid scientific approach as to understanding changes that we are trying to measure throughout the project phase.

We've also employed third-party peer review in this project, so the document you received in the EIS hasn't been just developed by us, but we have actually gone ahead and had additional peer review of the document to make

sure that we've had a good cross section of information included.

In this slide, I just want to highlight some of the successes that Manitoba Hydro has in working with indigenous groups, including First Nations and Metis, as part of monitoring projects for other projects, like Keeyask, Bipole, and Winnipeg East.

I know there is some really good examples from the Bipole project, where Manitoba Hydro has worked with community members to do traditional use plant surveys, to understand traditional use plant harvesting sites.

And the picture on the bottom is a good example, I think, of some work we did with students from Otter Nelson School in The Pas, to help incorporate their experiences -- pardon me, help incorporate some interest they had in wildlife and some of the interest we had in trying to understand the distribution and the parasite loading in white-tailed deer in the northern edge of their range.

These are just a small handful of examples where we've utilized the monitoring process as part of further engagement with First

Nations and Metis, as part of the monitoring process. And we look forward to continuing to work with First Nations and Metis as part of our indigenous monitoring working group, which has been discussed at other panels here this week already.

So we've had a lot of discussion about the valued component selection process, so I won't go through that again. But I just want to highlight these five core areas that are an important part of our monitoring program. And I'm going to give just high-level overviews of what we are hoping to do within this draft monitoring program, and then I'm going to pick a subset of these and provide you a little more detail about what exactly we are proposing to do on the ground and throughout the monitoring process.

For fish and fish habitat, as we've already heard in previous panels, we're going to be doing stream crossing assessments on key areas along the project right-of-way.

For vegetation and wetlands, we're going to be identifying and monitoring wetlands, plant species of conservation concern, invasive plant species, and traditional use plant species.

Wildlife and wildlife habitat, we're going to be looking at amphibians, common garter snakes, birds, ungulates and predators, and black bear.

Under employment and the economy, we're going to be working to monitor project employment, direct and indirect business opportunities, direct labour income, and taxes.

Under infrastructure and services, we are going to be conducting a traffic monitoring survey.

Now, this slide, I think, looks pretty busy, and it is probably hard to read from a distance, but if you flip through the environmental monitoring plan, under Table 4, you will find this under the schedule.

And I think it is an important component of the monitoring plan, because it lays out what I feel is a clear way of describing the valued components that we are monitoring, the key activities that are going to be conducted for each monitoring component, and then a breakdown in the schedule where we propose to conduct much of this monitoring work as part of preconstruction, clearing and construction, and finally

postconstruction.

So what I hope this provides evidence of is careful thought that we put into studying the valued components, the activities we are proposing to conduct, to understand changes as part of the monitoring program, and then an actual schedule that outlines when we are proposing to do this work, reflective of when this work needs to be done.

So under each one of the key monitoring activities, which I believe there is 22 of them in total, you will find in the monitoring plan that we have a breakdown of not only when we are going to do it, but even more detail, including timing, the methods, the parameters we are going to measure, the duration, the frequency, the metrics.

And one thing that I think is quite novel, and probably speaks to our incorporation of adaptive management, is a section dedicated to decision triggers and thresholds for action. I hope, within this presentation, I can help convey how the monitoring plan is not simply a process to gather information, put it in a report, and file it, but rather helping Manitoba Hydro in the

course of its operations to improve, to learn, and to continually adapt, based on information we're learning through this process.

I'm going to speak to some examples coming up now. So I'm going to speak to four individual key monitoring activities, that being traditional use plant species, amphibians, birds, and ungulates and predators.

Now, each of the 22 components I listed on the previous slide have a detailed breakdown, but in the interest of time and interest of this panel and the Commission, I wanted to focus on these four as examples. But feel free to read through the document, if you wish, to learn about what we are proposing to do for the other monitoring activities.

Under traditional use plant species, we had the benefit of land use and Aboriginal traditional knowledge studies provided by eight different communities listed here. All of these communities provided information that reflected their interest and their appreciation of traditional use plants. And so, by going through these Aboriginal traditional knowledge and land use reports, we were able to take the information

and not only recognize its importance, but to also develop a draft monitoring plan.

What we are proposing to do is to set up long-term vegetation monitoring plots at key traditional use sites identified within the reports provided by the communities.

As you can see on this slide of the project area, there is -- you know, the transmission project is quite a length, all the way from Dorsey down to Minnesota; and the green dots represent areas where we are proposing to do some sort of vegetation monitoring, whether that's invasive plant species, or species at risk, or species of conservation concern. The red dots are areas that we've identified as being suitable or good areas to conduct traditional use plant monitoring.

Now, how did we arrive at those 14 red dots on the map? Well, we went through the eight reports that were submitted that provided information on traditional use plants, and we selected areas that represented areas that were important for traditional use. So we used the information provided, and have developed these areas as spots where we propose to do long-term

monitoring prior to construction and through postconstruction, to help understand any potential changes to traditional use plant species.

Now, of course, this is still a draft plan, and we are looking forward to continuing to work with the indigenous monitoring working group to improve or augment or confirm that these are the locations that they feel are important for understanding changes to traditional use plant species.

As I spoke to you before, we have those five -- I guess there is six main monitoring questions that I outlined on Slide 5. And our objective under each one of these key activities is to answer those questions. Are we trying to confirm that the magnitude was assessed correctly?

And there is a whole list of questions that we really want to confirm for each one of these monitoring activities. But what I want to focus on for each one of these examples is our decision triggers and thresholds for action.

Each one of our activities has these specified and outlined in the monitoring plan, and as an example, under traditional use plant species, we have outlined that -- you know, if we

identify the significant unexpected decrease in the abundance of traditional use plant species, excluding trees, at locations identified by communities in the PDA, what will we do? What is our decision trigger?

Well, we have a plan in place that if we identify that there has been a reduction, we will report those results to the community that identified the area and discuss mitigation measures, such as opportunities for revised vegetation management options.

We don't want to be very prescriptive, because we can't anticipate every possible outcome; but what we tried to incorporate in this monitoring plan is just some general possible outcomes, and how we are going to actually, as a corporation, working towards adaptive management, how can we change or adapt our operations to incorporate this information we are learning through our monitoring program.

Next, I just want to move to an example of amphibians. There is two main species, and we had a really good panel discussion on amphibians prior to this. So the two I think that are really quite important, as we've identified,

are northern leopard frog and eastern tiger salamander.

This is a map showing areas that we have already done some baseline data collection for amphibians. And if you see the blue dots on the screen, those are areas that we have done analysis -- or we've done field surveys to identify the amphibian communities in those areas.

The red dots represent areas we are hoping to do more monitoring, as part of preconstruction, construction, and postconstruction. These sites would be areas where we can understand potential changes to the amphibian community, specifically focusing on leopard frogs and tiger salamanders.

Some of the approaches we're hoping to incorporate include some very basic measurements that most biologists or scientists are familiar with, using cool things like adult call surveys, visual encounter surveys, funnel trap surveys, and some basic water quality monitoring.

One species that I think is quite interesting, and perhaps deserves a little extra attention, is the eastern tiger salamander. Now, we had a good presentation by Marcel Gahbauer

prior to this, where he spoke about some of the endangered species in the region and the mitigation that's proposed in the assessment. I just want to speak briefly about how I think this particular species -- this particular species is quite unique.

In looking at the literature, you might find yourself quite worried about the status of the eastern tiger salamander, given that it is listed as endangered, and Manitoba Hydro is proposing a project in the one area in Canada where this species is known to occur.

What I would like to just help convey here is that we are proposing to do a monitoring program for the eastern tiger salamander, but I don't think we need to perhaps have quite the level of worry as we might initially feel.

The scientists in 2001 identified that we've probably, through DNA analysis, have two separate species of tiger salamanders in North America. So they did some DNA analysis, and when they drew the new lines about where various species occur, they drew a line from -- pretty much Winnipeg down through Texas.

And as a result of very little field

work and a poor understanding of the distribution of the species in Manitoba, mostly because we thought they occurred in very high numbers throughout the western part of the province, we realized that we didn't have a good sense of where these animals occur east of the Red River.

So when you do the literature review, and when COSEWIC, the Committee on the Status of Endangered Wildlife in Canada, I reviewed the literature; then I realized that there were only about six or seven sites in eastern Manitoba where this species is known to occur. Not necessarily because they are rare, but mostly because no one has ever spent time looking for them in this general location.

So Manitoba Hydro is concerned about this, obviously, but we also -- we know that through this monitoring process, not only can we collect information that would be useful to the scientific community, enhancing the understanding of where the species is, because there has been very little research on where the species actually occurs in Manitoba, but the mitigation measures we have incorporated and planned for this project will be helpful in mitigating any effects to this

species.

But as a side benefit -- and I think a benefit that many people, I'm sure, in the scientific community will appreciate -- is the effort Manitoba Hydro is doing to further understand the range and the locations of this species. Because our project will be traversing an area that may support the species. And actually, as part of our field studies in 2014, we actually added an additional occurrence of the species.

So I think there is some side benefit to some of the monitoring work we are going to be doing, not only for the project, but for the greater scientific understanding of this species -- and others, obviously.

Sorry, that was a bit of a sidebar. I really like those little critters, so I like to talk about them as I can.

Once again, we want to answer those main monitoring questions. On Slide 5, we have those five main pillars, I'm calling them, of our monitoring program; we are going to be striving to try to understand our effects on the species through the monitoring process by answering those

five essential questions.

But we also have decision triggers built in. So if we identify something, such as an insufficient riparian buffer, a decline in breeding activity of northern leopard frogs in the project infrastructure, or even perhaps the discovery of another location where the eastern tiger salamander occurs, we have some actions in place. And we have listed them on this slide, but also in the monitoring plan.

And again, I think this is further evidence of how we are hoping to incorporate adaptive management into our process, and not simply take the data and file it in a report, with no feedback mechanism.

Birds. So this is another area that we've heard, like many species in the monitoring program, from public engagement, First Nation and Metis engagement has been very important.

So we have four areas we're looking to monitor for birds. These include bird-wire collisions, species of conservation concern, sharp-tailed grouse leks, and aerial stick nests.

Again, I have a map here showing where we've done some survey work so far, to help

understand where bird collision survey risk may be elevated. We had the benefit of looking at sites near the proposed transmission line to help us understand where there may be an elevated risk. And so by using that information, and using professional judgment and information we've gleaned from other projects, we were able to identify bird environmentally sensitive sites, and those are indicated in red.

So we've already thought ahead enough to figure out where we believe we need to put added mitigation, and then also subsequent monitoring of bird collision risk.

The next species -- I know we've heard about this species already in the previous panel, but I want to reiterate how we are committed to the golden-winged warbler. This species does have identified critical habitat, as outlined by Environment Climate Change Canada.

The hatched area on this map indicates the critical habitat identified by Environment Canada in their recovery strategy. Now, southeastern Manitoba is not the only place where this species occurs in Manitoba; they are found through the Interlake and through Riding Mountain

and Duck Mountain.

We know that we have sort of an added responsibility for this species within this portion of their critical habitat, and so what we've proposed is two-part. One is a clearing plan that recognizes that certain habitats are actually preferred for this species, and so we are looking to monitor whether or not the clearing that we've proposed in these areas is going to be effective at providing habitat for golden-winged warbler. And secondly, we are going to be doing point counts and callback surveys to help understand whether the density of golden-winged warblers during the breeding season -- which is what we're hoping they'll utilize the area for -- whether the density is the same, or even better, perhaps, as -- after the project is developed.

Sharp-tailed grouse. That's another species that we heard a bit about in the previous panel. Sharp-tailed grouse have a unique life history characteristic whereby the males congregate on a small patch of land every spring to show off their dancing and try to impress the female sharp-tailed grouse in their given region.

So they can be somewhat sensitive

during this breeding season. So what we want to understand is whether the transmission line changes, perhaps, the abundance of sharp-tailed grouse on their traditional lek sites, and even try to understand if there is any behavioral changes. We don't quite know very much about what might happen with sharp-tailed grouse near a transmission line, and so we are going to be testing some hypotheses as part of our monitoring program.

And we will be using some unique technology there, such as trail cameras, and some traditional methodologies, like flush counts.

So we are going to try to answer those main monitoring questions, again, from Slide 5, but we also have some action -- some decision triggers or thresholds in place to help us determine what we should do if we identify things in the monitoring program, and how we can improve our activities and our operations moving forward.

It is quite a bit of text here; I'm sure you can read this within the environmental monitoring plan, but I just think it is important to emphasize that we have options here to primarily work with the regulators, to help them

inform us, as a utility company, what we can do to improve our operations and improve our performance on the landscape.

I think it is also important to remember that we could -- definitely want to work with an indigenous monitoring working group, to also have them as part of this monitoring process, so that we can seek guidance and information from community members as to what they would like to see happen, in the event that certain outcomes are identified as part of the monitoring process.

Ungulates and predators; so this is another portion of the monitoring plan. These were valued components that were identified through the assessment process, through public engagement and through the First Nations and Metis engagement process. So we have three main species that we were interested in investigating here as part of our monitoring program. These include white-tailed deer, elk and wolves.

So this is kind of a fun slide. Manitoba Hydro, as part of our preconstruction and baseline data collection, has established two large aerial survey monitoring plots as part of our project. And so what you see here is actually

the results of our 2017 monitoring process. What we have is a heat map that we developed based on the number of white-tailed deer sightings in our monitoring, 20 by 20 kilometre monitoring plots. And what we are hoping to utilize this data for is to help us understand the number and the relative distribution of white-tailed deer within the project area. And this data has been collected already, and it is proposed to continue to be collected in a systematic way through preconstruction, construction and postconstruction.

So what we've set up here as part of our program is a systematic way to help us understand any changes to, not only deer, but any other large mammal that may be found within the project monitoring area.

The red and green dots are areas where we are proposing to put up trail cameras as part of pair-wise monitoring program. This is how we can not only learn about animal use during the winter when an aerial survey is traditionally done under appropriate snow conditions, but also understand changes through other seasons, including the spring, summer and fall.

If you are not familiar with trail cameras, I think they are a really neat technology that has helped wildlife biologists and others actually understand the movement patterns and even relative abundance of various species in different habitats. So as a slide here, we used them extensively in other projects and they are effective in helping us understand the use of various areas by species like white-tailed deer, sandhill crane, bear, wolves, raccoon and even animals as small as red fox. So when they are applied and put up in a systematic manner, they can really effectively help understand the use of various wildlife species of a given area, either on a right-of-way or off a right-of-way, as we are proposing to monitor with this project.

Manitoba Hydro is also engaged in sponsorship of other research projects in southeastern Manitoba. And one I want to highlight here is a project that we are sponsoring with a student, he is actually from southeastern Manitoba. He is a Metis gentleman from Great Falls. And he is actually doing a PhD project on the ecology of wolves in southeastern Manitoba. He is doing this research project through Memorial

University in Newfoundland and Labrador. And he is actually taking on this project as part of a PhD. And what he wants to understand is the relative use of linear features and natural features of wolves as they roam through an area known as game hunting area 26 in southeastern Manitoba.

So what we are hoping to learn through this project is to what degree wolves utilize natural features and other linear features as they go about their daily and monthly and annual movements.

So this information that we will learn through this project with this student will help us in developing future projects, and also help us in mitigation and operation of existing transmission lines in Manitoba. We are really excited to be working on this project multi-year project with this PhD student.

One of the things we heard through our engagement process was the importance of an elk herd in southeastern Manitoba. And as part of that engagement process, we also became aware of a monitoring program that was going to be established between the RM of Stuartburn, the

Nature Conservancy of Canada and Manitoba Sustainable Development. What they were proposing to do was to conduct an elk collaring study to help understand the home range and habitat use of the elk in southeastern Manitoba.

So Manitoba Hydro provided some funding, and we became partners in this project. And so what has happened to date is over the last 18 months there has been two separate collaring events, and now there are approximately 12 elk that are collared in this herd in Southeastern Manitoba.

This information has helped us confirm the information that we presented in our EIS, but it is also going to, in an ongoing way, help us monitor the movement patterns of this elk herd in southeastern Manitoba that we have heard so much about.

So the project will not only help us understand home range and habitat use and calving sites and general movements, but a part of the project is also an ongoing long term population monitoring. So we are happy to be partnering with those groups as part of this monitoring program. And I think it is important to emphasize that it

is going to be continued as part of our monitoring program here.

Again we have those five main monitoring questions that we want an answer for every one of our key monitoring activities. But we also have some decision triggers and thresholds for actions incorporated into this plan. So if we do, for example, identify that elk have moved into the area, as unlikely as it seems based on what we have learnt to date, that's something that we have an action plan for. And if we do identify that there is changes in ungulate or predator occurrence or distribution relative to the project or relative to baseline data, we have got some mechanisms in place to communicate with the regulators and utilize new or better information as part of our ongoing management of the line.

So this can include simple things such as altering, changing, removing human access points, or perhaps adjusting some management schedules, or prescription of vegetation, based on what we are observing through the monitoring process. And then other things that we may learn through ongoing communications with the regulator and/or the indigenous monitoring working group.

Adaptive management; it is not just a slide or a page in our management or monitoring plan. I think we have tried to convey and intertwine adaptive management principles throughout our monitoring program. We recognize that this is an important advancement in the development of large projects such as the MMTP. So we have I think constantly tried to incorporate previous learnings and lessons from other projects, and incorporate mechanisms for us to learn while we are conducting our monitoring process and feeding them back into our process, into ongoing operations.

So we have communications, we have documents, we have processes and procedures and mitigation measures outlined within the monitoring plan that are fed back through the process and provide Manitoba Hydro with I think confidence that we are continually learning and using the principles of adaptive management within our process.

Finally we have reporting. So this is something that we do for all of our monitoring plans, not only is it required through regulation, but we want to make sure that we convey what we

learn through our monitoring plans to interested parties. So what we do is we have an annual submission and annual report that we will be putting on our website. We will obviously be exhibiting it to regulators, those being Manitoba Sustainable Development or the NEB, and also to any other groups that may be interested in getting copies of the report, if they would like to get it separate from what we provide on our website.

And then of course we are open to providing presentations to anybody who is interested in learning about our monitoring process. So if a report isn't really suitable, we would be more than willing to meet with anyone interested to provide a presentation similar to this, with respect to the outcomes of our monitoring process, just like we do for our other projects.

So I think in wrapping up, I think -- I'm hoping that what I have tried to convey is that we have a comprehensive, adaptive and responsive environmental monitoring plan that builds on the learnings and successes of other approved Manitoba Hydro transmission line environmental monitoring programs.

Thank you.

THE CHAIRMAN: Does that conclude the two for today then? Yes, it does. Do we have documents to file?

MS. JOHNSON: Yes, we do. Just a few today. MH060 are the answers to the undertakings. Sixty-one is the first part of this presentation. Sixty-two is the second part. CAC 004 is the excerpt from the Practitioners Guide. I think that's it.

(EXHIBIT MH-60: Answers to undertakings)

(EXHIBIT MH-61: Part 1 of Environmental Protection Program Presentation)

(EXHIBIT MH-62: Part 2 of Environmental Protection Program Presentation)

(EXHIBIT CAC 004: Excerpt from the Practitioners Guide)

THE CHAIRMAN: All right. Thank you any administrative matters?

MS. JOHNSON: No.

THE CHAIRMAN: Okay. Well, then we are adjourned for today. We will continue with

this presentation -- not tomorrow, not Monday, but Tuesday morning at 9:30, right back in this room. Is that correct? Yep. So we will be back here, 9:30 Tuesday morning. Enjoy the long weekend. We will see you all then.

MS. JOHNSON: Could I just add? We have this room all weekend. They have given it to us for free, so if you want to leave things here you are free to.

THE CHAIRMAN: All right. Thank you.

(Adjourned at 4:45 p.m.)

OFFICIAL EXAMINER'S CERTIFICATE

Cecelia Reid and Debra Kot, duly appointed Official Examiners in the Province of Manitoba, do hereby certify the foregoing pages are a true and correct transcript of our Stenotype notes as taken by us at the time and place hereinbefore stated to the best of our skill and ability.

Cecelia Reid

Official Examiner, Q.B.

Debra Kot

Official Examiner Q.B.